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THE PLACE OF MOUTH HYGIENE IN THE PUBLIC HEALTH MOVEMENT.

W. G. Ebersole, M. D., D. D. S.,
Secretary-Treasurer, The National Mouth Hygiene Association.

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THE brief amount of space allotted for the presentation of my subject prevents giving in detail the history of the oral hygiene movement of this country from a dental standpoint.

My first insight into the ravages that dental caries was making upon the American people came to me in 1888. I had been reading law for a year and a half and the close confinement had affected my health. Upon the advice of a physician I sought employment which would for a time take me away from my studies.

I obtained a position which brought me in contact with the members of the dental profession and their patients. It was here that I learned that thousands upon thousands of people were losing their health because of two things:

First: Because they did not know how to care for and use their mouth and teeth.

Second: Because they were afraid of dentists.

Although but a law student, I soon came to notice that the people who had mouths full of diseased or neglected teeth were decidedly below par physically.

It occurred to me that if a man should educate himself with a view of teaching the people how to properly care for and use their mouths and then teach the dental profession to use humanitarian methods in the treatment of dental lesions, there would be a greater field for benefiting humanity than in any other work.

From that day to this I have been preaching and teaching mouth hygiene to the general public and humanitarian methods to the dental profession.

When I began to associate with the members of the dental profession I found the dental men severely criticising the medical men for failure to recognize the importance of the service the dental men were rendering.

When I became a physician and a dentist I maintained that the only way to secure recognition was to prove the value of dental service as related to the health problems of the country.

When I entered the profession there was little or no thought being given to the prevention of dental caries from the scientific standpoint. Almost the entire energy of the dental profession was confined to correction of the faulty conditions brought about by dental caries.

I have been unable to ascertain where oral or mouth hygiene first originated. When I came into the profession in 1897, Dr. D. D. Smith of Philadelphia was teaching oral prophylaxis.

Cleveland Takes First Step.

In 1898 the Cleveland Dental Society made an effort and succeeded in having some dental instruction introduced into the Cleveland public schools; but the methods employed were rather crude and the results of but little value.

The first definite and successful result in establishing a dental clinic or free dispensary of which we have any record was in Rochester, N. Y., and in so far as we have been able to learn this city is entitled to the credit for the first permanently successful efforts along this line.

The first successful effort made by an individual to have mouth hygiene given recognition from a national standpoint was made by Dr. Richard Grady of Annapolis, Md., before the National Dental Association in 1899, when he succeeded in having an oral hygiene committee appointed by that organization.

For five years Doctor Grady and his committee labored faithfully, receiving but little recognition and making slight impression upon the members of the dental profession who were more interested in correcting conditions than they were in prevention.

Doctor Grady was succeeded by Dr. John P. Corley of Sewanee, Tenn., who served for five years as chairman of the oral hygiene committee of the National Dental Association, receiving recognition and consideration for his movement which would have discouraged even an optimist, and was finally succeeded by the writer, who put in four years of the stormiest time of his life in attempting to place mouth hygiene in its proper relation to the health problems of the country.

Mouth is Body Gateway.

I took the position that the mouth, the gateway to the human system, was the most important organ of the body, when it came to dealing with health problems and that it wields a greater influence upon the health and welfare of the individual than any other organ of the body.

While I expected a great wave of protest from my brothers in the medical

profession, it will interest you to know that the most severe criticism of the stand taken came from members of the dental profession.

We were called most everything that the ingenuous mind could lend tongue to for the position we had taken, and as a matter of self-defense undertook to prove not only to the dental profession but to the world at large the relation that the proper care and use of the mouth bears to the health, strength and working efficiency of the individual.

You will notice that I use the terms "proper *care*" and "proper *use*" of the mouth. It will be of interest to you to know that it fell to the lot of a layman to prove to the world at large the value of properly *used* mouths. I refer to Mr. Horace Fletcher, the president of the National Mouth Hygiene Association during 1911–14, who at the age of 40 was a physical wreck, refused by the insurance companies as too great a risk, by the proper *use* of his mouth, together with the selection of food stuffs, became at the age of 60 a man able to double the tests of strength and endurance made by the best athletes in the leading colleges of the country.

Medical Man Pioneers Way.

It was, however, a medical man, Dr. W. A. Evans, our first vice-president, who at that time was commissioner of health in the city of Chicago, who brought to the attention of the dental and medical professions in a forceful manner something of the importance that carious teeth bore in the spreading of disease. It remained, however, for a dentist to conduct experiments upon the result of which might be based some idea of the value of healthy, well-cared-for and properly-used mouths to the individual.

As chairman of the oral hygiene committee of the National Dental Association, I directed that examination should be made in the various sections of the country to find the percentage of mouths of public school children of this country that were diseased or in a faulty condition. These examinations were made in the various parts of the United States and it was found that from 96 to 98 per cent. of the mouths of the school children were in imperfect condition.

Having ascertained the extent to which school children were affected by dental caries or other lesions of the mouth, we undertook through the co-operation of the National Dental Association, the Ohio State Dental Society, and the Cleveland Dental Society, to conduct a series of experiments which would demonstrate the benefit to be derived to the individual from correction of faulty conditions and teaching the proper care and use of the human mouth. Forty children were selected as having the worst oral conditions from 398 pupils in the fourth, fifth, sixth and seventh grades in Marion school, Cleveland, Ohio, a school having an enrollment of 846 pupils. In selecting these children a careful and complete examination of the mouths was made and the history and class record of the children for

six months before the treatment began. Two sets of psychological tests were made at the beginning of our experiments to prove the actual working efficiency of the children at the time they were received for care and treatment. They were given full and complete instruction on how to care for and use the mouth and a nurse was placed over them for the purpose of securing their coöperation in the work we were undertaking, and dental service was furnished to correct all faulty oral conditions.

Conducted Many Extensive Tests.

The majority of these children were repeaters and many of them were kept in school only by the activity of the truant officer. Two special meals were served to these children for the purpose of teaching them how to properly use their teeth, and following the meal they were instructed how to properly care for their mouths. Of the forty children selected, five were dropped the first day because they would not agree to perform the duties which were required of them; and during the year's experiment eight more were dropped because of the failure upon their part to carry out the instructions given.

A remarkable showing was made as a result of these experiments. From the first of June, 1910, to the first of June, 1911, there was not a single case of illness of any member of the class. The school records, efficiency, attendance, conduct, and physical appearance showed wonderful improvement, while from a psychological standpoint the mental tests showed an average improvement of 99.8 plus per cent. for the 27 children finishing the work.

Do not misunderstand this statement. We said that the psychological tests showed an average increase in mental working efficiency for the year of 99.8 plus per cent. We did not say that this increase was due to the correcting of faulty conditions of the mouth, in other words the filling and cleaning of the teeth; nor did we say that this improvement or increase in working efficiency was all due to correcting oral conditions and the teaching of the proper care and use of the mouth. A part of this improvement was due to the natural growth and development of the children; but, by far the greater part of the improvement was due to the correction of the faulty conditions found, and the teaching of the proper care and use of the mouth.

"Care" Means Proper Cleaning.

By *care* we mean proper cleanliness, hygienic conditions. By *use* we mean the selection of suitable food stuffs and the proper manipulation of them while in the oral cavity, so that the best possible results may be brought about.

The showing made by this class was startling indeed, and the greatest shock was felt by the dental profession, which for the first time received

definite proof of the importance that the mouth bears to the health, strength and mental efficiency of the individual. The importance the mouth, then, bears to the general physical condition of mankind, entitles it and those who are devoting their lives to its needs, to a full recognition and consideration by those organizations, municipal, state and national which have to do with the physical welfare of the human family.

Every organization which has health for its consideration, should have not only in its council, but in its inspection department as well, members of the dental profession. And, in our judgment, those organizations which are the most progressive and successful in the handling of public health questions, will have the dental profession well represented on their staff of workers.

Think not that there is no need for dental representation in connection with health boards of bureaus; and think not that the medical men can successfully handle this important phase of hygiene and sanitation, for such is not the case. Conditions are so appalling, lesions so distressing and the physical condition so impaired by faulty oral conditions that public health activities must be supported by dental activities of the most forceful kind in order to produce a psychological impression which will, in a measure, lead to a full understanding, by the individual, of the obligations and duties he must perform in correcting faulty conditions in public health.

The people must be taught to know and do those things which will produce and maintain perfectly healthy oral conditions; and to accomplish this at this time the dental profession is essential and must fulfill its duty and its obligation if humanity is to come into its own.

The time is coming when medical men will wield sufficient influence to bring about a correction of faulty oral conditions, but now when the human mouth is the most neglected and ill-kept organ of the body, medical and dental men must combine and operate under the most ideal circumstances if the greatest good is to come to the greatest number and come to the present generation.

Let me call your attention to a few facts that have been long recognized but little understood. For years the physician has asked to see the tongue and the throat in diagnosis. Each carries its message, but the story has been only half understood.

The coated tongue, for instance, tells a story; but to the physician it is of things that lie beyond the tongue that it speaks, and not of the condition of the tongue itself. The coated tongue tells of lowered resistance and by its appearance may tell something more. But, what makes this coating? What is it? It is *microörganic life* that lowered vitality has permitted to multiply in such numbers that the whole mouth is filled with them and the tongue with its rough surface forms the best lodging places for them.

Getting Back to Causes.

We have come to recognize something of the influence the mouth has on health. Kissing has been tabooed—except on stated occasions; the individual communion cup has been adopted by the church; the public drinking cup has been forcibly discarded as an abomination; and anti-spitting ordinances have been passed in all our large cities. So far, so good. But what of the coughing, sneezing, singing, talking, yes, even the smoking public, with ill-kept and uncared-for mouths, from which when in action, millions upon millions of microörganisms are sent floating out upon the air.

Stop kissing if you can, arrest the spitter if you will, prohibit the public drinking cup if you must. Do these things and you have made progress; but, to give to humanity that to which she is entitled from a hygienic standpoint you would have to place gauze muzzles on over 90 per cent. of the people. We muzzle dogs to avoid one kind of disease. Why not muzzle men to avoid the many other kinds of diseases? It might be ideal, but hardly practical.

But to turn from jest to earnest. We have made progress in preventing the transferring of many microörganisms from individual to individual, but much remains to be done here. What have we done for the individual whose faulty mouth is a serious handicap?

Most of the efforts thus far have been made toward preventing the spreading of diseases, with practically no effort made to remove the cause. The diseased individual has been given no thought or consideration. We have not been concerned with his physical welfare.

Our method of dealing with diseased mouths has been about on a par with the activities of an officer who upon learning that a dog affected with hydrophobia was loose in the neighborhood, spent his time in warning people to keep off the street, to keep children in the house, and their dogs chained up; making every effort to keep people and animals from coming in contact with the diseased dog, but making no effort to destroy the diseased animal. We have been laboring to avoid an effect without removing the cause. The National Mouth Hygiene Association's plea is for the removal of the cause, and the effect will take care of itself. Let us deal with the mouth of the individual both in his interest and in the interest of humanity at large.

What the mouth means to the individual has been told in a measure by the experiments on the Marion school class. What has been done for the individual can be done for the public at large. It is ours, then, to teach and preach the power and influence the mouth wields for good or for evil.

Tests Made Work Possible.

Having ascertained the frequency with which diseased or faulty mouths were found among the American school children, and having through the Marion school experiments demonstrated something of the value of cor-

recting these faulty conditions, we were prepared to go before the world at large with something tangible in support of our statement that the human mouth is the most important organ of the body in dealing with the health problems of the country, and that it is the least considered and most neglected of all the organs of the body.

Learning these things we undertook through the organized dental profession of this country to teach the general public the importance of mouth hygiene, but met with only a small measure of success.

It was then we came to know that if the importance of mouth hygiene was to be impressed upon the American people it must come not through dental organizations alone, but through an organization which would permit all professions and all laymen to unite and coöperate in the spreading of the mouth hygiene propaganda.

It was with this end in view that the oral hygiene committee of the National Dental Association sought and obtained the approval of the National Dental Association for the creation of the National Mouth Hygiene Association, an all-professional, all-lay organization, which was organized July 28, 1911; an organization which during the last three and a half years has accomplished more in spreading the mouth hygiene propaganda and demonstrating to the American people the value of healthy, well-cared-for and properly-used mouths, than all the dental organizations in the country working alone as dental organizations had been able to accomplish prior to this time.

Teaching Mouth Health.

Many have misunderstood the work the National Mouth Hygiene Association has undertaken to accomplish in the interest of humanity. Many have thought that its teachings were confined to dealing with those things which pertain to the mouth alone. Such is not the case.

The purpose of the association has been to teach health, devoting its main efforts toward placing oral health or mouth health in its true relation to the general health problem.

Having ascertained the ravages that faulty or diseased mouths were making upon the health and working efficiency of the American people, and having learned that there were not enough dentists in the United States to take care of the people in New York city alone, those who were directing the mouth hygiene activities of this country came to know that the only possible chance of combating the ravages of dental decay was by beginning with the infant and teaching that line of procedure which would prevent dental caries.

It has been proven that a clean tooth seldom decays. Therefore cleanliness was the first law to be laid down by the National Mouth Hygiene Association.

It has also been demonstrated that an idle or lazy tooth succumbs more readily to decay than do the teeth which are used in mastication of food. Therefore the association has come to teach the care and use of the teeth.

The work of the National Mouth Hygiene Association is to teach "How to Care for the Mouth" and "How to Use the Mouth," also the kind of preparation to be used in cleaning the teeth and mouth and the kind of food to be used giving proper exercise.

Discussion.

DR. W. A. EVANS, *of Chicago:* The dental profession grew out of the medical profession, and by reason of the fact that a group of men caring for teeth had developed the art side of their science so that they became engrossed in the art of dentistry; that had its very great advantages, it also had its disadvantages. Its great advantage was that it led to the perfection of that art, and its disadvantage was that it led those men away from contact with the general medical profession and also that it led the mind of the general medical profession away from consideration of the teeth in their relation to the development of disease. We are beginning to understand that a very large part of the infections with which men suffer find entrance to the body through the mouth and nose; the great majority are there found. We have been disposed to put, I think, in the development of this idea, rather too much stress upon the nose as the focus of infection, upon the tonsils as the focus of infection, and, relatively speaking, at least, too little stress upon the teeth as the foci of infection. Most of the cavities of the body have the capacity of readily cleaning themselves. The nose can clean itself fairly well, not so well as other parts of the body, but least efficient in this particular are those structures we know of as the teeth, less efficient than the tongue, the incapacity of which for self-cleansing was alluded to by Doctor Ebersole. I believe that we are on the verge of the discovery that so far as these enemies are concerned, rheumatic affections and perhaps a considerable other large group of diseases are concerned, that infections with organisms that are found around and in the teeth are of very great importance.

DR. GEORGE M. KOBER, *President of the National Society for the Study and Prevention of Tuberculosis:* The subject of mouth hygiene, I think, acquired peculiar significance during the last two or three decades when we acquired some definite knowledge as to the spread of all infectious or communicable diseases. It was one of our American investigators, General Sternberg, who first discovered, I think in 1883, that the mouth, that is, the buccal secretions of the mouth, frequently contain some very virulent organisms capable of producing septic conditions when injected into animals experimented upon, He practically discovered at that time, though quite innocent or ignorant of its real effect, the ethological factor of pneumonia. He was the first to describe the pneumo cocus, but finding an organism in his own mouth and being perfectly healthy as he was, he did not dream for a moment that that was the real cause of pneumonia until it was demonstrated a year or two afterwards by Professor Frankel; the very organism that Doctor Sternberg had recognized in the buccal secretions of his own mouth and found in a very large percentage of perfectly healthy persons, was the real cause of pneumonia. Since then, of course, we have been impressed with the great elements of danger that may lurk in the mouth, especially when the mouth happens to be the seat of carious teeth. It has been demonstrated over and over again that the very cracks and crevices which are formed in the enamel practically afford suitable lurking places for microörganisms where they undergo rapid multiplication and bring about destruction of the teeth, and by gradual absorption of poison from these very lesions, are liable to result serious internal intoxications referred to by Doctor Evans. They are the result of toxins absorbed primarily in the buccal cavity and poisoning the blood to such an extent as to cause serious lesions elsewhere.

He might have referred to the work of Doctor Collins, the celebrated neurologist, who has presented evidence that a large number of what were formerly considered functional affections of the nervous system are really organic in their character and owe their origin to toxin absorption resulting from diseased teeth. I merely want to throw out to those specially interested two suggestions. After all, what is the primary cause of decayed teeth? I am old-fashioned enough to believe that our mode of living has a good deal to do with it, and I believe that the abandonment of our whole cereals had a great deal to do with weakening the power of resistance of the teeth and inviting premature decay. In other words, I believe that the outer membrane of rye and wheat contains certain chemical substances that are absolutely essential and definitely necessary to impart that degree of hardness, that power of resistance of the enamel in order to prevent anything like fissures and cracks upon the slightest provocation, and I believe it will be very wise to really resort to more primitive methods of consuming our cereals for that reason. The second and a very important predisposing cause is our pernicious habit or rather our habit of resorting to the pernicious ice pitcher, particularly during the abrupt changes at meal time, the abrupt changes from heat to cold are very apt to produce cracks or fissures, and when once a cracking of the enamel is established, as I said before, the microbe has a suitable lurking place and produces destructive effects.

DR. OSCAR DOWLING *of Louisiana, Vice-President of National Mouth Hygiene Association:* Four years ago the Boston Hygiene Association gave out the statement that 95 per cent. of the school children had defective teeth. I could not believe it, and the first school I went to after that, I asked the principal that I might have the privilege of making a personal inspection of the children's teeth, and out of one hundred children whom I examined that morning, I failed to find one that had perfect teeth, I could discover some slight defect in the mouth of every child whom I examined. I urged upon them the importance of using a toothbrush, endeavoring to teach them how to use it, and told them to buy five cents worth of chalk and use a stiff toothbrush as a dentist had told me, because I wrote to a hundred of them asking for advice along this line, to use the brush on the lower jaw by working from the lower up and around from the upper teeth down. It was rather surprising to see the demands made on the local stores for toothbrushes. I would ask the children "Have you a toothbrush at home?" And they would invariably say "Yes." I told them I was satisfied they didn't use it. The next morning I went into one of the stores and asked the man if he had a toothbrush. He said, "No," that he had five dozen on hand but in some way had sold them all the evening before. He told me that on the strength of this demand, about a month later he had ordered a large number of toothbrushes, but the people had quit buying them. I made another visit to the school and could easily detect that they had not been using the toothbrush. They insisted they had, but the evidence was against it. I have had a similar experience in different places in the state. I have attended dental associations and they have shown a disposition to cooperate in every way they can. In different places they are having free clinics where they examine the mouths of the school children, take those children to their offices and fill their teeth free of charge. Some have gone to a great deal of trouble in cleaning their teeth.

Through the kindness of Doctor Ebersole we learned of a film entitled "The Toothache" and have shown it in more than two hundred places in Louisiana. It pleases the children, reminds them of the fact that they should wash their teeth, and it shows them how, and we believe that it has been one of the best practical lessons that we could carry to the people of the state.

DENTAL CLINICS AS A COMMUNITY INVESTMENT.

EDWARD F. BROWN,

Superintendent, Bureau of Welfare of School Children, Department of Social Welfare, New York Association for Improving the Condition of the Poor.

Read before the Joint Session of the American Public Health Association and the National Mouth Hygiene Association at Jacksonville, Fla., December 2, 1914.

THERE are certain facts about school children, which owing to the frequency of their verification by scientific research, need hardly be amplified here. Briefly summarized, however, they are: That the vigor and stability of the commonwealth demand the most careful nurture of children; where the care, which ordinarily is the function of the parent, is neglected, owing to whatsoever cause, the state, in *loco parentis*, must exert its right to protect its wards against the havoc which is wrought through the neglect of their physical condition; health is an indispensable complement to a wise and happy state; the great menace of defective teeth is that the decay not merely attacks the local organ, which rots away, but evidences its destructive tendency in general devitalization of the body.

ORAL HYGIENE ESSENTIALLY AN EDUCATIONAL PROBLEM.

It is evident that parents are not awake to the serious consequences of neglecting the teeth of their children, or being awake, are ineffective in adequately attacking the problem.

The natural question which a discussion of this kind should provoke is, what shall be done about it?

To begin with, we are not of those who believe this to be an exclusively professional dental problem. It is rather, to my mind, primarily a problem of education. We doubt whether there are enough dentists in the world to treat all the persons in the world requiring dental care. We must base any action on constructive and preventive aspects, because it is quite possible that from that angle we shall reach the greatest number in need of attention.

The wide-spread infection of the teeth of school children is a particularly irritating problem, having its ramifications not alone in the dental health of the individual child but asserting itself in general physical disorders, the miscarriage of the educational economy, the imperfect preparation of the child for life, the general lowering of the vitality, rendering the plastic child especially susceptible to disease while impairing its prospect of future efficiency.

METHODS OF ORAL HEALTH EDUCATION.

There are two instruments with which we may approach this difficulty: The establishment of dental clinics for the free treatment of children whose parents are too poor to pay for private treatment, and the carrying forward

of a vigorous educational campaign among the people in a simple form on the prevention of dental defects and diseases and the conservation of the teeth. A combination of both of these activities would be better than to emphasize one in favor of the other. Such a campaign should stress the fact that in addition to the agonizing pain which accompanies tooth rot, many frequently suffer serious disability which may often be traced directly to neglect of the teeth. We know now what is causing this widespread evil and how it can be cured. It is not enough that we should know this, but we should let those who need this information most learn of it, too.

We should begin, perhaps, with the children, incorporating in the school curricula theoretical and practical demonstrations of oral health. We must even go back a little and instruct teachers to demand of their children the same cleanliness of the teeth that is now demanded of the boots, face, hair and nails. Possibly the time will come when in each public school we shall have especially constructed basins where the children as they come in the morning will be called upon to brush their teeth in a proper manner as regularly as they are called to assembly to listen to a reading from the Bible or to sing patriotic songs.

The time will come when we shall teach children not merely the use of the toothbrush, but the use of dental floss and antiseptic washes and the need of periodic dental examinations. It is not enough to teach the child the theory of personal hygiene, but it should be supplemented by actual toothbrush drills under the supervision of a trained teacher. The daily repetition of such lessons will soon make of the lesson a habit without the performance of which the child will be quite unhappy.

Graphic exhibitions of bad mouths and good mouths, the proper method of oral sanitation, the function and uses of the teeth, their care and preservation, should all be thrown upon screens where the simplest folk can come and learn and go away benefited. Exhibits might be made of portable material and ought to travel from school to school where parents and pupils and teachers could come to view them. These ought to be supplemented by lectures. The potent influence of the illustrated lecture is not to be underrated. The exhibits, bringing home to parents the need of proper care, will soon, I believe, result in children being taken to the family dentist.

The School Dental Clinic.

There is, however, a large group of children in this country whose parents are too poor to pay for such treatment, which is often expensive, and for those whose parents are ignorant or indifferent to their needs the extension of clinics such as are now established in New York, Rochester, Cleveland, and Philadelphia, etc., where necessitous cases receive attention, is essential in other cities.

It has been argued that the principle which provides for free treatment for physical defects of school children is not sound. This is based upon the reasons that it is not the duty of the state to provide such treatment; that it tends to pauperize the recipients; and that through indifference, poverty and neglect the causes of these unfortunate conditions arise; through public treatment a premium is put upon parental inefficiency and it tends to aggravate conditions by relieving parents of responsibility.

In answer, it is shown that the return in social efficiency incident to putting children in good physical condition more than offsets the cost of caring for the children later in life when the results of social neglect have accumulated and left them with chronic disorders. Much non-promotion is caused by loss of instruction due to absences from school resulting from illness of the school child. Neglected children are apt later in life to become unproductive citizens who must be taken care of by the productive units of society.

It has also been asked, should these school clinics provide treatment merely for necessitous cases, or should treatment be absolutely free? It is said to be economically unjust to tax the whole population for a service to a special class. The facilities to the support of which all contribute should be available to all. By the opponents it is claimed that it is no part of the function of the city to provide treatment of this kind; those requiring such treatment should be sent to the numerous hospitals and dispensaries which are supported by public and private funds; individual responsibility of parents might be brought home more directly by charging a nominal fee for treatment and cure.

On the other hand, it is argued that children whose parents can afford to pay for private treatment should go to private practitioners whose livelihood depends upon such professional service. School children with defects are probably retarded in their work. They themselves are not only the victims of this condition, but they also hold back other members of the class who are physically fit to go ahead but cannot do so without leaving the retarded ones behind. That is, the pace is set not by the brightest but by the poorest pupils. Investigation has shown that in the case of defective teeth there are so many poor children who cannot pay for treatment that unless clinical provision is made for them they will receive no attention whatever. Since tuition and books are furnished free to the pupils, the facilities whereby they may avail themselves of these benefits to the utmost should also be provided.

Such clinics should act not merely as mechanical repair depots where children are treated to go out and again neglect their teeth, but should be located in the schools, serving as centers for the dissemination of simple intelligence on oral hygiene. The clinic should confine itself to the treatment of children between six and eight years of age and should provide

toothbrushes, mouth and tooth preparations at cost to school children. Dental treatment in the earliest stages frequently is without substantial pain and the lesson of oral hygiene is thus early inculcated.

Such clinics may set aside definite hours for consultation when pregnant mothers can come to procure advice on the care of their own as well as the teeth of the expected infant. Undoubtedly the irregular eruption of the second molars, which often results in disfiguring the face, is frequently caused by premature or imperfect extraction of the milk teeth. Much of this could be avoided if the care of the infant's teeth could be taught to the mother by such consultation service.

Another question of importance is the present vogue of indiscriminately using tooth powders and pastes. A popular fallacy which ought soon to be destroyed is that all of these preparations perform the same function. This is not so, for, as you can readily see, the same tooth preparation may react in entirely different ways in two different mouths. Probably such tooth preparations should be sold only on the prescription of a dentist.

Leaflets in the language of the predominating race of the district where the prophylactic clinic is located should be distributed on all matters relating to oral hygiene.

Prevention—A Newer and Important Science.

The philosphy of prevention in the oral hygiene movement will, it is hoped, take the place of the futile attempt to reach a large number of school children through repair clinics. But there are other phases of the prevention of dental defects and diseases which should appeal strongly to us; it is more economical to prevent than to correct defects; it is more humane; it will undoubtedly result in increasing the productiveness of many persons who because of the condition of their teeth are rendered inefficient.

Dental defects and diseases of the oral cavity evidence their destructive tendencies in many avenues of advancement, namely, the physical, mental, moral and social.

The crust of popular indifference behind which dental decay was entrenched has been broken through. Now that dental and medical research have discovered that malnutrition, anæmia, stomach ailments, facial neuralgias and scores of abnormal conditions frequently have their origin in unhygienic mouths, the dentist has been exalted as an indispensable agent of the public health movement.

Defective Teeth Blocks Effective Education.

An educational project must carry its complement of pupils; an educational order with physically imperfect pupils does not measure its complete utility. That is the situation we are faced with. If there are children whose home conditions are such as to make impossible the care of the teeth,

and if society makes no provision for such care, we must be patient with the absence from school of such children, as they are in pain and are not merely incapacitated for performing school work but are disturbing agents in the orderly progress of the class. The children who for any reason remain from school miss the classroom work. Such lapses, occurring as they do now to a large body of our pupils, put them considerably behind in studies, which frequently eventuates in the failure of the child to move to the next class in a normal manner. The cost of the teacher, the school plant, books and the whole system, so far as that child—and there are over a half-million in New York City alone—is concerned, is without public profit. We are therefore obliged to provide funds in our educational budget for the reëducation of a large group of retarded children. Let us be specific.

During the first half-term of 1913, 189,840 of our New York city children were "left back." The semi-annual per capita cost of education here is $19.36. While it is not asserted that the lamentable condition is due to bad teeth, we cannot escape the conclusion that much of this retardation is due to absences which are the proximate cause of physical inability to attend school or to learn. Defective teeth being the most common of all the defects found among the children, the oral cavity must therefore assume its just share of the blame. The cost of reëducating these 189,840 children is $3,675,302.40. Does it pay any community to permit this waste to continue when the cause is so easily ascertainable and the solution so clear?

Rural oral hygiene must be fostered. As in other phases of social endeavor, the children in the rural schools are perhaps in a more precarious state than the urban children. This is due to their isolation and to the fact that there are fewer facilities for correcting such defects as bad teeth than in the city. Central clinics in schoolhouses seem feasible for the city, but in the rural districts we shall probably have to institute an ambulating clinic. Oral hygiene education, however, should receive special attention in country districts. Itinerant lecturers and exhibits do much to draw the attention of the people to the danger of neglecting this phase of health work.

Physical Incompetency Conduces to Economic Destitution.

Sickness, or physical degeneracy, more than any other single factor, it has been said, is the cause of social dependency. To enter into the uncertain struggle to maintain life in industrial society as at present constituted, at least two things are indispensable: 1. A sturdy physique; 2. Preparedness.

With numberless dental defects among our school children, we are denying them the first essential of social competency. The physical condition of the child which precludes the orderly educational process from function-

ing properly, conduces to a low degree of efficiency in preparing the child for the stern realities of life, thus depriving it of the second essential. These social denials make for social incompetency, which produces social dependency, waste and misery. The care of the oral cavity will undoubtedly help to reduce and prevent poverty; it will assuredly, in association with the other movements in this direction, do much to check the possibility of destitution overwhelming the man who is sturdy of body and sound of mind.

Discussion.

DR. DONALD B. ARMSTRONG: The amount of dental decay in New York City is indicated by the following figures:

In 1913 the medical inspectors of the Department of Health found 194,207 cases of dental defects among school children. However, only 37.3 per cent. of the school enrollment was examined that year. Assuming the same ratio of defects in the unexamined children there would be apparently about 524,000 cases of dental defects in the city schools. This means that 59 per cent. of the school enrollment is in need of dental care.

How adequate are the facilities in New York City at the present time for handling this situation? In 1913, of the 69.7 per cent. of children found in need of medical aid, only 23.8 per cent. is reported as having been treated. This work was done by six dental clinics caring for 3,970 patients, giving 28,239 treatments. There are at the present time nine dentists employed in New York City at a salary of $1,200 who work three hours a day, and there is one supervising dentist receiving $1,500. These six clinics are all located outside of school buildings.

Now in order to determine just how adequate, or rather inadequate, these facilities were the Bureau of Welfare of School Children of the Association for Improving the Condition of the Poor made a survey of the situation, attempting to ascertain the efficiency of the present treatment, the actual number of defects, the possible use of private hospitals and dispensaries, the possible maximum use of the free clinics and of any private facilities. I present these details because such an outline might prove useful in other cities.

On a basis of the results from this study our Bureau asked for nine additional clinics and dentists and was successful in getting this request into the Department of Health budget. It meant an additional expense of about $27,000 for equipment, supplies and professional service. In this work the Bureau had the most useful coöperation and advice of the First District Dental Society of New York City. This Society met with our Bureau, held and adopted the following principles, to which it gave hearty support:

1. That it will support the modest request for nine additional dental clinics as outlined in the proposal of the Bureau.
2. That the dental clinics be established in school buildings.
3. That the clinics be open from 9 to 5, with two shifts of dentists, each working half time.
4. That the supervising dentist, for adequate compensation, devote his entire time to the work.
5. That the clinics should extract, provide plastic fillings, and clean teeth only.
6. That the Bellevue equipment be utilized for the surgical work.
7. That the dentists be paid $1,200 a year for half-time work.
8. That a system be devised whereby the work of the dentists be checked up to insure efficient treatment of each school child.
9. That the clinic concentrate its work on the children between six and eight years of age.
10. That the treatments be absolutely free.
11. That, while the two-chair clinic has advantages over the single-chair clinic, for the

present it is wise to organize nine additional single-chair clinics and subsequently, if it be deemed wise, equip these nine stations with additional chairs.

12. That the school clinic provide toothbrushes, mouth and tooth preparations at cost to school children.

Unfortunately, because of war retrenchments, the Board of Estimate refused the Department's request for additional dental clinics this year. On the other hand, we were successful in getting two additional medical inspectors, eight additional nurses, two nose and throat surgeons and one full-time medical inspector. This increased substantially our facilities for discovering defects but it is the remedial mechanism that most urgently demands expansion.

Our propaganda for dental clinical expansion will be renewed next year and with better hopes of success. Its failure up to the present time is not the result of a lack of an active and public-spirited dental profession. The lack of increase in dental facilities is not the result of an inferior Department of Health in New York City, under which Department this work is carried on. New York City has at the present time the best health administration we have ever experienced. What we lack and what is necessary before this program can succeed is an intelligent general public opinion which shall insist that those in public office be authorized to spend a paltry $27,000 to prevent physical defects among school children so as to decrease the $3,600,000 now spent annually to reëducate defective children in New York City. It is the principle of prevention that must be taught and the false economy of ineffectively curative and palliative measures in social organization.

Dr. G. W. Goler, *of Rochester:* I am very glad to hear this paper, because we in Rochester have been for a long time interested in this matter of mouth hygiene. We have four dental chairs that are free or comparatively so, and of those four chairs, three of them are in school buildings. We make our dental inspection a part of our medical school inspection, that is, the dental inspection is carried on by the medical school inspector, and wherever he finds a child with defective dentition, that child is referred to the nearest school or, as in the case of one of the associated health organizations, a free dental clinic; and then we also have follow-up work. The school nurse takes care of that follow-up work and endeavors, as far as she can, to provide that these children are looked after systematically. Of course, as has been said by some of the other speakers, it would be almost impossible, even if we had our dentists multiplied by four or five, to take care of all the dental work that needs to be done for school children. We then take up dental inspection when the child comes for its paper to go to work. There we found a very strange condition of affairs. We found among the South European children, particularly among the Italians, that about 80 per cent. of those children at 14, when they came for working papers, had microscopically or to the ordinary observer, perfect teeth. We found of our own children, and the children of North Europeans, that about 90 per cent. had imperfect teeth. I am rather inclined to agree with what Doctor Kober said about our getting away from a coarse diet and about that in some way having something to do with the decay of the teeth. Some of us eat graham bread, part or all of the time. We forget the fact that old Graham, sixty or seventy years ago, was really preaching a kind of doctrine. He preached this doctrine throughout our section of the country, that the only thing you had to do to preserve the teeth in children as well as adults, was to eat graham bread. That statement is borne out by some of the very interesting investigations that were undertaken in Africa at the time of the building of the Assouan Dam on the Nile. A great many of the older cities, of thousands of years ago, were to be inundated by the waters of this dam when the Nile was dammed back, and the British Government, coöperating with the Egyptian Government, sent out a Commission of scientists and took out from the neighborhood of the Nile 5,000 or 6,000 bodies varying in age from 3,000 to 5,000 and sometimes 6,000 years old. They found a very curious condition of things. They found that the aristocrats had decay of the teeth, just as our aristocrats have decay of the teeth, but they found among the proletariat and particularly among the children of the proletariat, that decay of the teeth was just as

rare as decay of the bones. When those people began to examine the intestinal contents of the stomachs of these people, they found that not only about their mouths but in their intestinal contents, mixed with food, was a considerable quantity of sand. They could also find in the mouths of these people considerable quantities of sand. You may say that that sand got in there accidentally. It doubtless did get into the mouth accidentally, but it did not get into the stomach or the digestive tract altogether accidentally. In all cases they found that these teeth, while they practically did not decay at all, were simply ground in the older people until the crowns of the teeth were almost on a level with the gum-line. This is some evidence at any rate, that coarse food, mixed with sand, may have something to do with the prevention of decay of the teeth. (Applause.)

DR. ROGER PERKINS, *of Clereland:* I have been very much interested in this paper. In Cleveland we have made certain starts in this line, and although I am in no way connected with it as a teacher of hygiene, I am very much interested in anything that has a bearing on the line of prevention. It has been established that the relation of health and the much-abused term, efficiency, is extremely close, and all we have to do is to establish that any definite condition is an interference with health, to establish that it also must be an interference with the best results we can get out of the race or any part of the race, and also to follow that up by showing that any interference with health at the formative period of the race in childhood is likely to have more far-reaching results than those occurring in adult life. The only way we have of finding out whether a thing is important or not is by investigation. If we do decide that it is important, we then have to carry the matter on by education and when necessary by treatment or something analagous, the result of various bacteriological work of one sort or another, and the subsequent education of the families, has been very clearly shown in the general attitude of the children nowadays toward the use of the common slate pencil or toward the distribution of chewing gum, apples, etc. I find that my own children have a strong objection to putting anything in their mouths that has been touched or handled by someone else. The information with regard to the question of teeth, malformations of the teeth, decay of the teeth, with regard to the efficiency of the child, and subsequent adult, seems fairly adequate in showing to us that something must be done about the mouth. Having this information, there is then the question of education and the question of doing something about it. If we are going to do something about it in the schools, that is to say at the formative period of life, we have got not only to show that there is a certain degree of danger in carious teeth, a certain degree of interference with development, we must not be content with sitting down and admitting that this is so, we must do something about it. Just as in other matters of this sort, especially of school children, there are numerous objections raised, one of the most prominent of which is that if we do anything in the line of treatment in the schools, whether medical or dental or anything else, we are approaching rapidly a complete advanced condition of socialism in which everything, if you reduce the matter to a *reductio ad absurdum*, in which practically everything will be done for the children. It is an argument I have often heard, "Why stop with medical inspection? Why stop with dental inspection? Why stop with school children or children insufficiently fed at home? Why not supply them with clothes and everything else? In fact, why not remove them entirely from the care of the parents and bring them up under the care of the state?" Everyone must make his own decision as to how far the danger of that may be carried on, but it seems necessary to do something about it. The question has already been brought up of expense, with regard to the additional burden put upon the taxpayer; the objection has also been brought up in regard to the physician having possible cases removed from his jurisdiction and the possible reduction of his fees. This question has already been discussed in regard to dispensaries in other lines, and I think the decisions arrived at there may hold good here. As to whether follow-up methods should be pursued, that is a question that leads to a great deal of argument with us. On the question of expense, we need statistics as to whether it is more expensive to follow up the case at home, see that the

father and mother take the child to a dentist, or whether it is less expensive to establish a clinic at school to care for the matter at once. I have no personal experience along these lines, but it would seem to me in a general way that unless something more or less strenuous is done with regard to these problems of carious teeth in school children, and not entirely in the school children of the poorer classes, we are going to have a persistence of the present very unsatisfactory conditions of the development of teeth and interference with education which we have seen in the higher grades of the school.

DR. FRONZAC, *of Buffalo:* I can thank the National Mouth Hygiene Association for doing the most excellent work they have been doing in being able to have dental inspection in our schools. Last year, when the International School Congress was held in Buffalo, the National Mouth Hygiene Association had a most wonderful exhibit and the result was that principals who had formerly tried to have dental inspection in schools and were unable to do so, have since been successful on account of the excellent exhibit of this association. In Buffalo we had medical inspection for several years; twenty-five school inspectors and school nurses, but no dental inspection till this year. We have now dental inspectors, dentists, assistant dentists, nurses, two dental dispensaries and one central dental dispensary. No child can obtain a child labor certificate if his teeth are bad and when he comes to the department of health for his child labor certificate, if his teeth are bad he must go to the dental dispensary and obtain a certificate that his teeth have been attended to, otherwise he cannot go to work until the age of 16. Recently I have been able to obtain through the Common Council of the City of Buffalo the passage of a resolution that in the future, no public school in the city of Buffalo, either elementary, high or technical school, can be accepted by the city unless there is a waiting room and a clinic whereby a dentist can work on the children's teeth in that particular school (applause), because we believe that no child can make progress unless it has good teeth. The child cannot digest, and if it does not digest it suffers from gastro-intestinal troubles, is pale, anæmic, sub-normal and will not be able to make any progress unless his or her teeth are good, and I therefore consider a dental clinic in a school building more important that a laboratory or many other rooms which formerly were considered unnecessary, and I hope that other cities will be able to have the success we have in being able to have dentists, dental dispensaries, and what is more important, a dental clinic in every school building in a community.

POPULAR EDUCATION IN MOUTH HYGIENE THROUGH ORGANIZED PUBLICITY—THROUGH THE PLATFORM, THE EXHIBIT, THE MOTION PICTURE, THE PRESS.

M. JERMAIN JONES, M. A.,
Director-General National Mouth Hygiene Association, Washington, D. C.

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"PREVENTIVE medicine is the watchword of the hour, and enlistment in the cause can come only through education." Dr. Milton J. Rosenau, Professor of Preventive Medicine and Hygiene, in Harvard University, so voices a great truth.

Oral hygiene—the hygiene of the mouth—is one phase of the movement toward preventive medicine. Technically, it may be termed, preventive dentistry. It has developed a large body of truth, relating to the care and use of the mouth, with the result that progressive dentists and hygienists have come to realize their responsibility to the public in the matter of educating them to the importance of preventing dental decay by cleanliness, and more rational diet and mastication. The movement has steadily grown until it has been given the popular title of The Mouth Hygiene Propaganda. The slow process of education of the dentists, themselves, in the first place, and of the people at large, has been discouraging even to the optimists, and not a few of those who have been foremost as advocates before the public have fallen by the wayside, exhausted and disheartened over the slowness of response to this all-important truth. The united efforts of educational leaders and aggressive dentists made clear that the secret of success in getting the truth about the care and use of the mouth into the minds of the people with sufficient power, so that they would act upon the truth presented, lay in the force of publicity—organized publicity.

Mere publicity may be good; but organized publicity is best. Organized publicity means educational publicity. It represents a combination of the teaching art, and printers' ink. It unites the skill of the pedagogue and the genius of the publicist. A mastery of its underlying principles is essential to any forward movement in popular education, and an application of those principles in the field of mouth hygiene will yield the same return as is found in other great health-promoting movements. Organized publicity unites in one the functions of the teacher, the advertiser and the salesman. The aim of the advertiser is the aim of the salesman—to influence the human mind. Organized publicity goes a step farther, and

seeks as an objective to influence the human mind to act, to apply personally the truth so conveyed.

I conceive the function of any well-ordered program of publicity to be, broadly, twofold: First, to awaken, inform and enthuse members of the dental and medical profession, and leaders in the great task of educating the youth of our country, with reference to the strategic importance of mouth hygiene in the personal and public health problem of the nation. Second, to enlist the rank and file of the people in the practice of simple rules of mouth hygiene in the light of its obvious advantages to the person, and to the community. The first function contemplates organized expert leadership for proficiency in propaganda. The second contemplates popular education for promotion of practice among all people of the simple rules of mouth health.

In contemplating the forces that are to accomplish this great task of awakening 90 per cent. of the people who are now more or less indifferent to the claims of mouth hygiene, nothing can surpass in value the enlightened personal professional service of the expert, of the dentist himself. As in politics, the leader must lead; so in the problems of diet and dentistry, the expert must advise. Before there can be publicity, there must be information. Science is organized knowledge, and science must master the laws of personal hygiene before attempting to give it as truth to the rank and file of the people.

The determining factor in a civilization, some one has said, is not in the opinion of the experts, so much as it is in the institutions of the people; and so, mouth hygiene is not a matter merely of the doctor, the dentist, the chemical expert, or of the schoolmaster alone; it is the concern of every man, and every woman, of every boy and every girl. The individual is the ultimate coöperative unit. He must know the plain truth about the proper use and care of the mouth. He must apply that simple knowledge for himself. Mouth hygiene, like the safety first, anti-tuberculosis, or anti-hookworm, must have the coöperative person, and the coöperative community as allies in the campaign for disease prevention.

The means of publicity, which are touched in this paper, are not all-inclusive. They are selected as the best methods of bringing about the results desired, economically and efficiently. The platform, the motion picture, the exhibit, the press are means of conveying truth to the minds of the people. The more perfect these instruments of publicity become, the more effectively will that truth be implanted in the minds of the people, and the more promptly will they be likely to act. It is expected that in due season, as a result of such a movement as that represented in the mouth hygiene propaganda, the average intelligent person will consider the proper care of the teeth, and the mouth, fully as important as the provision of the right kind of food and drink, and that that same person will come to under-

stand that it is quite as important properly to cleanse and treat the mouth as it is properly to clothe the body when appearing upon the street. It is presumed that the ultimate goal of such a propaganda would be to establish as a habit, akin to the habit of the bath, the daily meal, the amenities of ordinary life—the habit of mouth cleanliness.

To bring this all about, a vast campaign of education must be promoted by those who realize the importance of the problem. Our dentists and our doctors must become teachers. Interest in the idea of caring for the teeth and mouth must be awakened. Well-informed interest in the habits about the care of the teeth and their preservation will result in better habits of mouth health.

The task is a task of changing the attitude of indifference, carelessness, and wilful neglect to one of positive conviction, as to the need for safeguarding the health of the mouth. The average intelligent person is not at all interested in health. He becomes concerned only in case of ill health. He gets interested in his teeth only after they have become diseased, decayed, troublesome. Toothache drives a man to the dentist. The great big job of the mouth hygiene movement is to get people interested and active in preventing diseased teeth, and teaching them the fundamentals about the care and use of the mouth. As the port-of-entry to that marvelous mechanism known as the alimentary canal, the vital importance of the oral cavity, so far as it relates to essential nutrition, and the nutritive processes, are concerned, must be taught.

The four principal agencies utilized in this campaign during the past four years, have been the platform, the motion picture, the exhibit and the press.

The people of America are not tired of informing lectures; they are wearied of mere vaudeville and entertainment on the lecture platform. A man with a real message about how to live and who knows how to tell it can always get a hearing. One has only to consult the lecture bureau managers to ascertain the fact that the lectures on various aspects of bodily health at the hands of qualified men are sought for constantly.

Witness Doctor Sperry, Doctor Barker, Doctor Wiley, Doctor Evans and Dr. W. S. Hall, Dr. Woods Hutchinson and others.

(Enlarge upon the platform as a feature. Mention the lecture bureau of the Mouth Hygiene Association, Dr. Edwin N. Kent, Director. Mention stereopticon slides. Develop an automatic device for showing the same.)

The *motion picture*, as a device for popular education, has been perfected and exploited so thoroughly that it needs only to be mentioned. One of the first things undertaken by the Mouth Hygiene Association was the presentation of a scenario entitled "Toothache." Nearly fifty of these films have been sold throughout the United States, and in Germany, Aus-

tralia, Japan and South America; and it is estimated that the number of people who have been reached through health-weeks, under auspices of dental societies, and in schools, has mounted into the millions. The film is exhibited here in conjunction with the Southern Health Exhibition, and may be seen by the members of the convention who are not already familiar with it.

The New York State Dental Society has recently produced a new film entitled "Oral Health," which supplements the work presented in "Toothache," and shows why it is necessary to have a healthy mouth in order to have a healthy body, in a graphic and interesting fashion. There are a number of films, available for the use of mouth hygiene propagandists, which have to do with the nutritive processes, such as an x–ray picture of a stomach in actual process of digestion; tuberculosis films, and those relating to aspects of the food problem.

The *exhibit* has undergone a tremendous development in the past five years. Probably the International Tuberculosis Congress in Washington and the First International Congress on Hygiene and Demography gave the greatest impetus to the use of the exhibit as a means of popular education, and the attention of experts in the field of surveys and exhibits has pushed this device forward by leaps and bounds recently. The oral hygiene exhibit of the National Dental Association, and the Ohio Dental Society became the basis of the National Mouth Hygiene Association's Exhibit on oral health. This exhibit has been supplemented by a number of placards covering specific experiments in certain fields. It is felt that as it now stands, the exhibit is too technical to be widely useful in popular education, and plans are under way for revising this whole propaganda with a view to putting the simple facts more effectively before the people. There can be no doubt that the use of the exhibit as a means of popular education will grow, and that with it will develop a more effective use of this device.

The *press* is the great vehicle of socialized information. All education is a fitting for the service of humanity; but socialized education is a fitting of the greatest possible number for that service. The slogan of the survival of the fittest, has given away to the new ideal, that of fitting as many as possible to survive. The question of popular education in disease prevention is, How can we enlist the people in giving the mouth hygiene truth its proper place in their thought-life, and in their practice? It is a problem in applied economics; in applied science. In the solution of that problem, nothing can surpass an enlightened personal service, either professional, personal or general; but, to multiply the effective work of one man or one woman by the wide-spread influence of organized publicity through the million-tongued press, so that thousands will know and act in response to its daily stimuli today, where one did yesterday, is one goal of the mouth hygiene movement. Social and civic workers, leaders in education, ad-

vocates of personal and public hygiene, join the pioneers of the mouth hygiene in the dental and medical professions, to declare this new truth in disease prevention, to the people by word of mouth; but the program of organized publicity will add to the effectiveness of this message the science and art of diffusing information by a wise and effective use of the press.

Steadily the attitude of the daily press in America is changing on some of these fundamental matters of community interest. The city editor is becoming a community editor. Information in the field of health of vital moment to the people at large is being looked upon as a commodity quite as important in its value as the result of the baseball or football game, or quotations of stocks in Wall Street. As John H. Collins says, "One of the world's biggest staples today is information—a vital necessity. The successful man is the man who has the best information to act upon, and lack of information is found at the bottom of evils characteristic of our modern world. The newspaper is the principal medium for distributing information. People consume it as regularly as food, and it touches everybody oftener, and over a longer stretch of life than schools, churches, books, plays or any other information medium. For some reason, however, it has lagged behind in the general improvement of business. It still sticks to its original idea of telling what is wrong and abnormal in the world, whereas the world has reached the point where it also wants to hear what is normal and right. The newspaper will meet the modern needs better when it adopts some of the business methods that have proved better in selling pickles, and a little of the business policy used in making soap."

"Science cannot prevent disease. It can only tell people how to prevent it. To repeat the instructions over and over, to get them into everybody's consciousness, is an important duty." So writes the editor of the *Saturday Evening Post*, in commenting on disease-prevention day in the state of Indiana, by virtue of the governor's October proclamation. We have a long way to go yet in the economics of information. Fundamentally the thing is weak at the point of distribution. Organized publicity will help to strengthen it, and make the repetitions of instruction in matters of health as vital a factor as any other established feature of the daily newspaper. Papers like the *Chicago Tribune*, *Cleveland Plain Dealer*, *The Philadelphia Public Ledger*, *The Minneapolis Tribune*, and *The New York Times*, and now *The New York Tribune*, have shown the way, and with the steady rise of public opinion in these matters, there will be further response of greater intelligence, skill and enthusiasm manifested by our newspaper makers in all that relates to matters of vital health interest in the lives of the people.

We all agree that there is a best way to live, and that it is best to live the best way. The scientific leaders—the experts—must show us the way. The enlistment of the people, by means of popular education, through organized publicity, will follow as day follows the night.

Discussion.

MR. WALTER STOREY *of the Russell Sage Foundation, Department of Surveys and Exhibits:* I have been asked to discuss the exhibit from the purely technical side. The exhibits of today are rapidly going forward from the technical side. The exhibits of a few years ago can no longer be considered. The exhibit work, that is of presenting an idea to the popular mind, is closely linked up with advertising, with the psychology of advertising. In the work which the various social organizations are doing today, they are making great strides toward putting forth an idea which ordinarily would be uninteresting to people, in an interesting way. There should be two classes of exhibits which are often confused. One is the purely technical exhibit, or rather the exhibit intended for scientific perusal, the other is the same subject but treated in a popular way. A great deal of very good material is lost on the popular mind because it is not steeped down so that it can be comprehended. Another phase of the work which has to be carefully considered is the method, the actual technical method of presenting it. The panel form or chart form is the most popular and apparently the best way of presenting ideas. In connection with that, the arrangement of the photographs, the cartoons and especially of the text has to be carefully considered. One has to remember that these small exhibits, while not very large in themselves, are generally associated in an exhibition where there are ten, twenty or fifty other collections of panels of the same kind, so that the visitor, by the time they get to your exhibition, is tired in mind and body to a certain extent, and you must give them something which will stimulate their minds and arouse their intellect to take in a fresh idea. The forms in which that is done are now being worked out very rapidly. We have the question of photographs which are not taken haphazard out of a collection which an organization owns, but taken especially for the need for which they are intended. If the exhibit is going primarily to school children or to young people, photographs of a certain subject have to be taken with that in mind. Photographs which are intended primarily for scientific viewing of a technical exhibit which those who know something about the subject will look at, of course can be of a more general sort. The use of cartoons is a great help in any exhibition. These can be made so that an idea can be presented in one picture which would take a whole sentence or paragraph to otherwise show it up. Then the attractiveness of the exhibit has to be very carefully considered. Sombreness in some exhibits is possibly in place, but after all we must remember that people go to exhibitions, in one way, to be amused. Many subjects are not interesting in themselves; we must make them interesting to the people, and to present an exhibition with very good material in it in a rather sombre and unattractive way, is defeating your own ends. The question of color, of arrangement, of spacing, of lettering, of the general decorative features—all have to be considered. In connection with the panels is the question of devices. Every exhibit, as I said, is composed mainly of the panels or placards. We must have the dimension exhibit to relieve the eye of the visitor. A booth simply filled with panels on its side is a very flat sort of object after a person has looked at twenty or thirty booths of that type, but they immediately become interested in any moving device or a model, and through a model an idea can be presented in a photographic way. They have to concentrate their attention, and anything that moves will do that. Today we have in the graphic exhibition a method of getting over ideas which in the past would have taken a great many books and in many cases we never could reach the people we now reach in that way, because a great many of the visitors to the exhibition are not those who read the papers or books, or special pamphlets gotten out on the subject which we desire to inform them upon.

MR. E. A. MOREE: I am not a doctor, I am simply an ordinary press agent. I don't see why they have a press agent talking about publicity, but somehow or other Mr. Jones thought we wanted it. I think that most public health workers and most public workers of any kind, in speaking of publicity as far as newspapers are concerned, usually think of the news articles, the so-called free publicity. That is a wonderful word—free. We see it in all the patent medicine articles and things that are sent you free until you get them and then have to pay the bill. It is just about the same with free publicity. There isn't anything free about

publicity. You don't get your pamphlets free. You have a moving picture film made and you pay $1,000 for it. You don't get your halls free where you have your meetings and you don't get your publicity free. Now a lot of stuff is printed—and when I say stuff I am referring to it now as the newspaper man refers to anything that comes to his desk—(laughter) a lot of your stuff is printed and you don't pay anything for it in money, but you must, perforce, pay for it in news interests by furnishing the newspaper man something that he wants to print, something that he thinks his readers will want to read. Now, a good many long-suffering and good-natured newspaper men, of whom, up to five years ago, I was one, being one of these metamorphosed city editors who have become a community editor, in the words of Mr. Jones, a good many of those good-natured chaps will print articles that you send them simply because they like you and they think that you know a lot about the subject that you are writing about, and must perforce be conveying something of interest and importance to readers of the paper, so they print it. But tomorrow you will come around with something that hasn't the slightest semblance of news and ask that it be printed, and he will begin to look at you a little suspiciously, he will think you are riding a free horse to death, and most city editors do think that about public health workers and philanthropists generally—I will tell you that confidentially. There is only one way to avoid that—we are riding a free horse to death, riding him to death, not in furnishing a lot of stuff that ought not to be printed, not in furnishing him a lot of stuff for free use, but in furnishing him material that he has no business to print if he is a newspaper man. Just as often as we furnish to the newspaper editor a poorly written press bulletin, a poorly conceived press story, one that hasn't any news in it whatever, one for the printing of which we depend entirely upon the good nature and personal interest and the friendship of the news editor, just so often we are taking away our pull, if you may put it that way, with the newspapers. Now we have a good standing with the newspaper people; we are engaged in laudable work and for a good purpose, and the newspapers being interested, all of them with few exceptions, in good things, are naturally interested in getting our propaganda before the public, but we are running the risk of being cast out of the columns of the newspapers, the news columns of the newspapers, entirely, by not realizing that, with publicity the same as everything else, we must pay for it if we really get anything. Now I wanted to say two or three words about the value of paid advertising to all public health work and philanthropic work generally. If you get what you pay for and pay for what you get,in publicity,as in everything else, I think we must realize that in constantly applying to the newspapers for free publicity, we are getting always in our publicity simply the handout. If we are beggars and go around to the back door asking for a sandwich, we have to take what we get and cannot choose. Now there is a line in all publicity where the news ends and the advertising begins. Now we have not realized that, we have not got to the point of recognizing that the space in a newspaper is valuable space, that it is to be sold. We criticize justly the newspapers for printing the advertising of the quack doctor; we criticize them for printing the patent medicine advertisements, and the criticism is perfectly just, no decent newspaper man will take that back, no newspaper with a properly conceived policy will print patent medicine advertisements and quack advertising, but what would you do if you were a newspaper man and the tinsmiths of the town organized an association and passed a resolution that it was unethical, from a tinsmith's point of view, to advertise, and then those tinsmiths went around as individuals and roasted the city editor for printing the advertisement of a tinsmith who used putty instead of solder? How far do you think that tinsmith would get? That is what we have done as doctors. That is what the dentists have done from their point of view, and it is perfectly proper from their point of view; but the newspapers are in the business of selling advertising space and instead of devoting all your publicity fund to the purchase of pamphlets and the hiring of halls which you have to pay for, and to the purchase even of billboard space, isn't it perfectly fair, is it not only fair but the only honest course, to devote at least a portion of your advertising fund to the purchase of newspaper space? Then you won't have to take the handouts, you won't have to take the suit of clothes that is four sizes too large for you or seven sizes too small; you can write what you want and insist that it gets into the paper in the right place.

THE IMPORTANCE OF MOUTH HYGIENE TO GENERAL HEALTH

HARVEY W. WILEY, M. D.,
President of the National Mouth Hygiene Association.

Address before Joint Session of American Public Health Association and National Mouth Hygiene Association, Jacksonville, Fla., December 2, 1914.

THE hygiene of the mouth is not a new study. It has been generally recognized for many years as an important adjunct to the hygiene of the body. It is only of recent years, however, that the study of mouth hygiene has assumed the dignity of a separate branch of public health activity. In the general oversight of the public health, the medical profession of the United States has taken the initiative and leading part. In the organization of mouth hygiene as a distinct branch of the public service, the dental profession of the United States has taken the initiative and is expected to assume the leading rôle.

Lack of care of the mouth and its appendages is prejudicial to health in several ways. In the first place, a decaying tooth is always a menace, and especially when the decaying process reaches below the gums. Ulcerations, pyorrhœa or Rigg's disease, and other infections of the root of the tooth, are difficult of access and treatment and for this reason are always to be regarded as a dangerous condition. Aside from the pain and suffering which these diseases of the teeth produce, we must not forget the possibility of direct infection. So-called blood poisoning and death have been frequent sequelæ of diseased teeth. Some forms of inflammatory rheumatism are thought to be caused by the infection of pyorrhœa, and in general the health is injured in proportion as the teeth are affected.

In the second place, defective teeth are a threat to health by reason of impairment of mastication and consequently of digestion. There is no difference of opinion concerning the value of good teeth, properly used, in the preparation of food for the digestive processes. While the vigorous stomach may attack particles of food of considerable size and resistance, the process of digestion is naturally slowed up in proportion to the magnitude and firmness of the unground particles. In addition to this, the admixture of healthy saliva to the food during the process of mastication is of no little consequence, especially in the digestion of starch. Thus defective teeth not only injure by reason of imperfect mastication, but likewise by reason of a failure to properly incorporate the saliva with the finely divided particles of the food while it is still in the mouth.

On Monday, the twenty-third of November, 1914, it was my good fortune to be invited to attend the first dental clinic ever held in the city of Washington in a public school building. Fifty of the progressive dentists of Washington have made an agreement to give two hours of their time per month to a public school clinic, and the Board of Education has set aside

a small room in the Pierce school building, at the corner of G and Thirteenth Streets, Northeast, for the installation of the operating room. Gifts of dental chairs and apparatus have been made by dentists and others, so that the room is now equipped with two chairs and a small but somewhat effective set of apparatus suitable for clinical work on children.

For some time the city of Washington has instituted partial dental inspection of the children in the public schools. From the dental inspector I have obtained the following data: During the two years in which he has been engaged, for part of his time only, in dental inspection, he has examined 10,230 of the school children of the city, between the ages of six and sixteen years. He has found 32,307 cavities in the teeth of these children. He has found that of the permanent teeth 984 have been lost. He found a total of 81,910 teeth that needed systematic cleaning, and 6,056 that were so far decayed that they needed extracting. Of the total number of children examined, 9,071 had cavities in their teeth and 468 had abscesses at the roots of the teeth. A number of children whose mouths had been examined by the dental inspector were present for the clinic on the date mentioned. One need only look into those neglected mouths and note the ravages of disease and lack of attention and cleanliness to understand the urgent necessity of work of this kind.

It is a matter of shame that the capital city of the country is so far behind many of the other cities in a reform of this nature.* It seems almost incredible to believe that until the present time no systematic steps have been taken in Washington to remedy these crying defects. I imagine there are many other cities in the country even as badly off as Washington, and there may be some of the first class that have not yet installed a dental clinic for the benefit of those children whose parents are wholly unable to hire the work which is necessary.

In Washington it is proposed to operate in the public school clinic only on those children whose parents are unable to meet the expense of the work. Children of parents who are able to pay for the work will be given a card, describing the nature of the work which is necessary to be done, for presentation to their parents, and the school authorities will urge upon the parents the necessity of having this necessary work done. No attempt will be made at the present to bring any pressure to bear upon the parents by excluding their children from the school or otherwise. It is evident, however, that the full value of the dental clinic in a case of this kind will not be secured until some method is devised of bringing pressure to bear upon the parents in order that the dental work necessary may be done.

We now have a provision in our public schools which excludes unvaccinated children. This is a wise precaution to prevent the introduction of smallpox into the public schools. When it is remembered, however, that

*In Boston, the Forsythe Dental Infirmary for Children, richly endowed, and housed in an ideal building, has been formally opened.

bad mouths, decaying teeth and neglected gums are doing far greater damage to the people of the city of Washington than smallpox, we may well ask why we are so careful in regard to the lesser danger and so negligent in the face of the greater? As I looked into the faces of these poorly nourished children, who, even if they had good food, would be unable to properly assimilate it, I was impressed with the magnitude of the work and the great underlying principle of humanity and philanthropy to which it owes its inception and to which it must look for support. It will evidently be some time before the school authorities of Washington are able to secure from congress the necessary authority and facilities to thoroughly renovate the mouths of the school children of the city.

In Washington, as in many other places, the value of a good, wholesome luncheon for children has been fully established. By means of a popular subscription, warm luncheons, often with a piece of roast beef, have been provided for many of the indigent children of the city. Improvement in deportment and scholarship was most marked in these cases. Can we doubt that a similar improvement in deportment and scholarship would attend the renovation of the children's mouths? It seems to me that it would be very proper for this association in some official way to throw its influence toward a general movement throughout the country for betterment of conditions in the mouths of the children. Through the children, best of all, the parents can be reached, and through them the gospel of sanitation and hygiene of the mouth may be carried into the home and made the more effective.

Hundreds of the school children in Washington, and I suppose the same is true of other cities, have never been instructed in the use of the toothbrush and know nothing of its value. It seems almost incredible that such crass indifference, threatening the very foundations of society in so far as health is concerned, can prevail. I never realized fully the value of an organization of this kind until I attended this clinic and was overwhelmed with the testimony which was visually presented to me of the necessity of action. As I look at the matter it is highly important that we should begin our work of conservation of the teeth long before the children enter the school. The tooth is a tissue which needs a particular kind of nourishment. While it is true that there is no such thing as special food for nerves, or brains, or muscles, or teeth, it is true that a properly balanced diet is necessary for the general sustenance of the body. The tissues of the tooth are composed chiefly of lime, phosphoric acid and nitrogen. The foods that contain the proper amount of these bodies are therefore fundamental in securing the proper growth of the teeth. The campaign for sound teeth in the child should be inaugurated many years before his birth.

The temporary teeth of children should be good, solid and enduring, in order that they may remain in place until the permanent teeth are ready to erupt. Otherwise the permanent teeth may be extremely irregular in character and deformed in contour. If decay set in in the temporary

teeth, it is highly important that it should be arrested by a filling of a cheap character but nevertheless sufficiently enduring to last as long as the temporary tooth. Thus the proper direction of the permanent teeth is secured, and at the same time they are not subject to any special germ of deterioration by reason of contact with decayed temporary teeth.

In regard to the production of teeth of the right character as a function of food, I may say that the milk of a healthy mother has in it all the elements necessary to nourish the temporary teeth. As some of these teeth, however, erupt after weaning, it is of the utmost importance that the child, after weaning, be fed a diet sufficiently rich in tooth-building material to produce a complete temporary set of teeth of the best quality and to lay the foundations for the production of the permanent teeth. My own experience leads me to believe that the child, after weaning, should receive a generous supply of pure, clean, wholesome milk from tuberculin-tested cows, and at the same time be fed cereals which have not been denatured. Of these, wheat, Indian corn, barley and oats are types. Rice which has not been polished and which has not lost the important principles of the rice bran may also be given once or twice a week in moderate quantity. As soon as the temporary teeth are sufficiently developed, hard substance, such as toast, zwieback or graham biscuits, should be given daily in sufficient quantity to develop, by the proper exercise of their functions, the character of the teeth. Fruits and vegetables suitable for the child's nourishment are not to be neglected. A little spinach once or twice a week is excellent in the furnishing of some of the elements, such as iron, which are important.

The things to be avoided in the nourishment of the young child are starch, sugar, candy and polished rice. The child that is fed good, wholesome milk and such cereals, fruits and vegetables as I have mentioned, needs scarcely any other adjuvant for the nourishment, not only of his teeth, but of all the tissues of the body. If milk is not given in some considerable quantity, a little powdered carbonate of lime or a little lime water may be given from time to time to supply the deficiency of lime in the cereals, where the phosphoric element is usually in excess. Such a diet will develop in the child a normal growth of temporary teeth and lay the proper foundations for those of a permanent character. If you do not get good teeth in childhood you will never have any. The mature molars are of but little account.

When the first permanent molars begin to erupt, the necessity for continuing this kind of diet is still paramount. In fact the whole regimen of the child, as long as growth continues, should be based upon a balanced ration in which all of the elements necessary to nutrition are present in proper quantities. This idea of the balanced ration in respect of the development of good teeth is somewhat at variance with the common practice of dosing children from earliest childhood, in fact, almost during infancy, with sweets. My own experience shows that a child has no natural sweet

tooth. If he is not fed sugar and candy and other sweets he will have no craving for them, in fact, may have a positive dislike for them. Nature not only is one of the best chemists, but also one of the best hygienists. In the sugar which she puts in milk she finds no place for a sweet taste, milk sugar being almost devoid of sweetness. I am more and more convinced by experience, study and observation that the common habit of feeding children sugar, candies and starches is highly detrimental, and especially so to the development of the teeth. It is a common idea, which I think is a correct one, that the eating of sugar and candy is bad for the teeth. It is not so bad for the teeth, however, in the common acceptation of the term, which implies that the eating of sugar and candy tends to produce decay in the teeth. That, in my opinion, is not the chief objection. The eating of sugar and candy unbalances the ration and interferes with the proper composition of the tooth itself during growth, thus leaving it especially subject to the ravages of decay.

I urge upon this association the careful study of this problem, namely, the proper nutrition of the child to secure a good set of teeth. I believe we will come pretty close to striking at the heart of the trouble when, through investigation and study of this kind, we come to the conclusion that the child's food is the dominant factor in the character of his teeth. In thus emphasizing this important fundamental principle I do not in the least intend to minimize the importance of caring for the teeth once they are formed. The child who has hard, sound, regular teeth needs to be taught the principles of proper care. This means, of course, in the first place, the proper functioning of the teeth. There must be an abundance of chewing of the right kind and it must be well done. The tooth is no different from any other organ of the body. To be in prime condition it must be properly exercised. In order that it may be kept from the ravages of decay it must be kept clean. Eternal vigilance is the price of good teeth.

After the age of childhood, the care of the teeth, while not so important, is no less desirable. It is not at all uncommon at the present time to see men and women of middle age with false teeth or none at all. This of course means simply improper development of the teeth in the first place, or carelessness in their use in the second place. I do not know of any reason why the teeth should not last as long as the eye or the ear or any other organ of the body. While I am aware that age lessens the usefulness of all the organs of the body, I am an advocate of that course of life which would keep all of the organs in synchronic usefulness ending in synchronic decay. My ideal of life is set forth in that wonderful poem of Dr. Holmes (which most people think is only a bit of fun, and yet it is the expression of the most salutary philosophy), namely, the story of the One-Horse Shay.

Does anyone here doubt that human life would be very much lengthened and made far more endurable if, without the change of any other of the conditions of the environment, we could assure to men and women during

their life an excellent, unimpaired and serviceable set of teeth? It would be extremely unscientific and unwise to make any estimate of how much human life would be lengthened if human teeth were kept in a perfect state, but I would not come far from the truth if I should suggest the average lengthening of life by many years as the reward of such an accomplishment.

I take it for granted that in this association no one will doubt that the greatest of human blessings is health. Health means not only freedom from pain and a capacity for enjoyment, but a great deal more than this. It means ability to serve. We hear much now of efficiency in business. We read of the stories of the efficiency engineer, who goes into a manufacturing establishment and turns a deficit into a profit without expending a single dollar more than was spent before. It is known as "system" or "efficiency." And so, without increasing in any degree the expense of human existence we may make it far more effective by the introduction of that system which secures the highest efficiency.

One of the dominant factors in this system is health. We all approve the efforts which are making everywhere to exclude the causes of disease, especially the causes of contagious and infectious diseases. To this end we establish quarantines, we destroy foci of infection, and we arm the individual with an additional resistance by means of antiseptics and disinfectants. We teach in our schools and colleges the principles of sanitation. It is a matter of gratification that the principles, as well as the practice, of the sanitation of the mouth are not to be neglected. In one great institution of learning in this country there has been established a department of mouth hygiene under the supervision of Dr. Wm. J. Gies, who has already done special service in studying the chemistry of the mouth. Other great institutions have departments of sanitation, hygiene and public health. I feel quite certain that the example which has been set by Columbia University will be speedily followed by other institutions of learning throughout the land.

Instructions of this kind will prove more effective than the teachings in the dental schools for professional students. It is a kind of instruction which will filter out through the newspapers and magazines and from the public schools and the pulpits of the country into the homes of all our people. Knowledge is a precedent to effective service in any direction, and effective service in sanitation cannot be accomplished by striking in the dark. We may sometimes by a lucky thrust in the dark strike our antagonist, but we are just as apt to strike a friend. It is the "pestilence that walketh in the darkness" which baffles human endeavor to suppress and not the pestilence which has come out into the open and "wasteth at noonday." Yellow fever and smallpox and typhoid and measles and whooping cough and diphtheria are all pestilences which have ceased to walk in the darkness and have come out into the light. These diseases are effectually combated. It is cancer and arterio-sclerosis and Bright's disease and diabetes that are still walking in the darkness. The pestilence that is

destroying the teeth of our children or which has not allowed them to be produced has long been walking in the darkness. We will now bring it to the light, where effective work in guarding against it and in defeating its purposes may be accomplished.

At the Atlantic meeting of the American Medical Association last June, Doctor Billings read an instructive paper on focal infection as the cause of endocarditis, arthritis deformans, rheumatic fever, nephritis, acute and chronic, myocarditis, exopthalmic goiter, chalicystitis and diabetes, in which he said:

> The focus of infection may be located anywhere in the body. The usual site is in the head, in the form of alveolar abscess, deep tonsillar or peritonsillar abscess and chronic sinusitis.

Doctor Thayer, in discussing the paper, said:

> When one meets today a mitral stenosis or insufficiency he proceeds in a very different way from that in which he did twenty years ago. One's first thought now should be to search for a focus of chronic infection by the removal of which the probability of progression of the malady may be greatly reduced.

Doctor Anders said:

> If foci of inflammation are found there, they should, of course, be energetically attacked without delay. It is important to recollect that if removal of such focal infections fail to bring about a cure of the condition from which the patient may be suffering, it is not evidence to the contrary, but means, as pointed out by Doctor Billings, that hematogenous metastasis has already taken place.

Doctor Rochester said:

> I wish to speak of focal infections especially of the teeth and tonsils. In three cases having teeth infections accompanied by endocarditis in which there were no manifest symptoms in the mouth, but in which the Rœntgen ray showed an abscess at the roots of the teeth, when the abscess was removed the symptoms subsided and the patients improved clinically. The organism found was the ordinary streptococcus pyogenes.

While writing this paper, Doctor King of Washington told me of a case of diabetes which had just been under his care in which the removal of a pyorrheal tooth effected a speedy disappearance of sugar in the urine.

From the pathological laboratories of the University of Pennsylvania, Doctors Smith, Middleton and Barrett have just published a paper on "The Tonsils as a Habitat of Oral Endamebas," in which they say:

> In connection with work recently carried on by Smith and Barrett in the pathologic laboratories of the University of Pennsylvania indicating that the parasitic amebas of the mouth hold an important relation in the etiology of pyorrhea alveolaris or Riggs' disease, and that by the use of emetin (alkaloid) as an amebicide these organisms may be destroyed and the pyorrheal lesions cured, we have sought to determine whether these protozoa may not find their way also into the tonsils and there perhaps be of importance in determining or in maintaining certain of the inflammatory lesions of these structures, at least with or without associated systemic complications. To the present time only the first of these propositions can be said to be proved, that is, that these parasites actually at times involve the tonsils. The conditions of the tonsils of persons in whom they have been found infested, and the behavior of several positive cases with systemic complications after the administration of emetin, however, are decidedly suggestive and encouraging to continued investigation now in hand.
>
> Riggs' disease has for years been suspected of primary relationship to various systemic

disturbances, including particularly certain chronic or recurrent arthritic affections, and possibly, too, some of the anemias of obscure origin and degenerative lesions of various parenchymatous organs; and even greater suspicion, amounting almost to certainty, has attached to tonsillar affections in relation to such systemic complications. Following these ideas, which are essentially those of Hunter and others, the possibility of more generalized influences must necessarily occur, the effects of either the endamebiasis or of the associated bacteria, or both. Direct extension of the inflammatory processes, or lesions due to metastasis by lymphatic or hemic convection, or due to the effects of swallowed or absorbed toxic products are, logically, at least, to be thought of.

In several instances in the series of cases treated for pyorrhea by Doctor Barrett, there has been noted, after the cure of the pyorrhea, the disappearance of symptoms of gastric and intestinal disorders. Similar experience has been related to us by several dentists following emetin medication; and while perhaps in a few cases this may be due to the happy effect of a coincidence of pyorrhea and amebic dysentery (as in a case communicated by Dr. F. C. Narr of Philadelphia to us), this explanation can be accepted only in exceptional instances. It would rather suggest that the cure of the oral lesions has diminished the bacterial and other poisons which previously had been swallowed and had been causative of some grade of gastritis. . . .

Whatever other relation may obtain between the amebas and the accompanying vegetable microörganisms, one may be certain that the amebas feed largely on the latter and in this bacterial phagocytic action they doubtless set free from this and from that organism different endotoxins. Doubtless bacterial toxins thus originating play a more important part than do toxins from the amebas themselves, if there be amebic toxins; and the end-results of toxic absorption are sure therefore to vary, now manifesting as hemolysis, now as cellular degenerations or necroses of fixed tissues, now as inflammatory changes as of synovial or serous membranes.

Thus it is seen that many of the fundamental conditions which attend common infestations of the mouth reach out in organic connection with some of the most destructive and painful diseases to which we are obnoxious. Mouth hygiene thus establishes an organic relation to diagnosis and therapy in a manner which is most suggestive of proper prophylaxis and remedial treatment.

Pyorrhea alveolaris is the "great white plague" of the teeth and recent progress in its etiology and treatment is beginning to offer some hope of a speedy check to this tuberculoid pest. The intra-alveolar injection of a strong solution of bifluoride of ammonia and the intravenous use of emetin are indications of the therapeutic dental triumphs of the near future.

All who are here, and many thousands who are not, have enlisted in this army to battle for the public health. There should be no bickerings, nor cross purposes, nor envy, nor jealousy, to mar the effectiveness of our campaign. There should be no ingress of an attempt to serve mercenary interests under the guise of serving the public health. Allies can be effective only when they work to the same purpose. The National Mouth Hygiene Association has cordial organic relations with the American Public Health Association and with all similar organizations that are battling for the betterment of humanity. It is a good omen that we meet at the same place and in the same rooms and that our audiences are composed of the same people, that we are working in a common cause and our victory will be for the benefit of all humanity.

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Secretary, Dr. E. R. Hayhurst, Columbus, O.

MOUTH HYGIENE.

We devote a part of this issue of the JOURNAL to the papers and discussion of the highly significant movement of Mouth Hygiene as presented before the joint session of the National Mouth Hygiene Association and the American Public Health Association at Jacksonville last December.

When Sir William Osler, addressing the students of the Royal Dental Hospital a few years ago, declared that they must preach the new gospel of mouth hygiene—"the cleanliness of the mouth; cleanliness of the teeth; cleanliness of the throat"—he voiced the conviction of leaders in the dental and medical profession who had been quietly pioneering what is known today as the Oral Hygiene Propaganda. And what Dr. Osler added in conclusion of his address is now recognized by the medical and dental experts everywhere as true: "Oral hygiene—the hygiene of the mouth—there is

not one single thing in the whole range of hygiene more important than that!"

Here are some outstanding facts which indicate that the general appreciation of the significance of oral hygiene in relation to the personal and public health problem is growing tremendously.

The Goodrich Company of Akron, employing 15,000 to 18,000 people, inaugurated on the first of February last as a part of its Division of Safety and Hygiene, a finely equipped four-chair dental clinic. Its function as a part of the health-promotion program of this great industrial corporation is known by actual examination of every employee or prospective employee, the real condition of the mouth, including the teeth and tonsils. Its further function is one of education in the fundamentals of mouth hygiene and ministry to the cases requiring immediate dental service.

Of greatest significance are facts brought out in the first few examinations. Of 130 applicants passing through the dental clinician's hands in one day, only three could be approved as O. K. Another day, two out of ninety were passed.

Industry, in the interest of safeguarding community and personal health of employees, has here adopted what amounts to compulsory education of all in the care and use of the human mouth!

Five years ago Dr. Gulick found but five well-organized school dental clinics in the United States. Reports made October, 1914, to the Federal Commissioner of Education at Washington, from superintendents of schools, show 141 school dental clinics in 109 cities, maintained either by board of education, board of health or by volunteer agencies.

Rochester, N. Y., pioneered the organized school dental clinic, beginning in 1905. After ten years of voluntary maintenance of this service under the Rochester Dental Society's auspices, in March, 1915, the municipality voted $4,000 for support of the three established clinics.

Cleveland, Ohio, secured $30,000 by popular subscription in March, 1914, for maintenance of free dental clinics in the schools of the city, there being insufficient funds to do this work at public expense due to extraordinary conditions in Ohio school funds.

Kansas has just enacted a law permitting Kansas City, Kan., to establish a school dental clinic as part of the school activities. New York state had a bill introduced recently into the legislature providing for free school dental clinics.

In 1911, the National Mouth Hygiene Association was organized in Cleveland through the initiative of the Oral Hygiene Committee of the National Dental Association. Its chartered purposes were declared to be to teach the American people the significance of mouth hygiene in relation to general health and common welfare, and to unite in an effective working program those who believe that the economic value of clean, wholesome mouths justifies a special campaign of education.

THE VICTORY FOR PUBLIC HEALTH IN NEW YORK STATE

The New York State Health Law of 1913 is in many respects the most progressive and admirable yet enacted in the United States; and the group of experts (headed by Dr. Hermann Biggs), which has been gathered to-

gether to carry out its provisions, is probably unsurpassed by any state health organization in the Union. It was, therefore, with grave concern that American sanitarians learned of the attacks upon the law and the organization which were projected by influential politicians during the course of the legislative session which recently came to its close.

Two of the bills introduced by the majority leader of the overwhelmingly Republican Assembly robbed the Public Health Council (whose wise exercise of its power was editorially reviewed by us last October) of its power to fix expert qualifications for public health officials and required that the Sanitary Code, established by this body, must be submitted to the legislature for its approval. Another bill reduced the number of the state sanitary supervisors, who form perhaps the most important element in the whole scheme of organization, from twenty to ten. Another made the executive divisions of the department permissive instead of mandatory. Another required full-time service from the commissioner and the directors of divisions. With this latter requirement the JOURNAL is of course in sympathy on general principles and provided it is applied to all state officials without discrimination. As aimed at the health department alone under the local conditions obtaining in New York it would simply have deprived the state of the inestimable services of Commissioner Biggs and in combination with the other measures cited above would have thrown the department open to political exploitation. Finally, nearly a dozen different bills were introduced to repeal the law which provides a minimum salary of ten cents per capita for local health officers in communities of less than 8,000 population.

Four of the worst of these measures passed the Assembly without a dissenting Republican vote. Then the people of the state began to be heard from. Letters and telegrams poured into Albany so that the desks of the legislators were buried in them. The newspapers rallied to the support of the department in a way that astonished its warmest supporters. Practically every paper in New York City took the most emphatic stand against the "ripper" bills and all through the state the same unanimity appeared, Republican papers being as vigorous as the Democratic ones, in their denunciation of any tampering with the health of the people.

It is said that the members of the Senate (which like the Assembly was Republican) grew so fearful lest the bills should pass, that whenever the chairman of the Public Health Committee, Senator Whitney, made a report, half a dozen senators were on their feet to make sure that he was not reporting them out without their knowing it. Senator Whitney, however, stood firm for the vital public interests in his charge and Governor Whitman took occasion to express his confidence in Commissioner Biggs and his determination to retain his services throughout his term of office. Not one of the bills aimed at the state department emerged from the Public Health Committee of the senate; and a bill abolishing the salary minimum for local health officers was decisively defeated on the last night of the session.

The lesson of all this is that Public Health is coming into its own; that it may and should be made a political issue in the good sense of the term; and that, if a health department in this present day achieves results and lets the people know about it, it need not fear the attacks of the politician.

THE SMALLPOX EPIDEMIC AT NIAGARA FALLS.

LINSLY R. WILLIAMS,
Deputy Commissioner of Health, New York State.

Read before the General Sessions, American Public Health Association, Jacksonville, Fla., December 1, 1914.

GENERAL DESCRIPTION.

THE city of Niagara Falls is situated on the easterly shore of the Niagara River midway between Buffalo and Lake Ontario. The city of Niagara Falls was incorporated in the year 1893, having previously been an unincorporated village in the town of Niagara Falls. In 1892 the town of Niagara Falls, including the unincorporated village, had a population of 12,638; in 1900 the city of Niagara Falls, excluding the surrounding township, had a population of 19,457, and in 1910—30,445.

Before its incorporation as a city, Niagara Falls was famous for its falls, and consisted chiefly of a few hotels and boarding houses and a number of other residents whose livelihood depended largely upon the tourist trade. Before being incorporated as a city it began to grow as a manufacturing village, and after the installation of the electric power plant, developed by means of the water power taken from the falls, its manufacturing growth rapidly increased as well as its population.

Its population is mainly native-born white, being 59.5 per cent.—25 per cent. of native parentage; 34.1 per cent. are of foreign or mixed parentage, and 39.6 per cent. foreign-born white. Of the foreign-born, nearly 4,119 are Canadians, 1,272 English, 832 Germans, 839 Irish, 1,926 Italians, 1,395 Russians, 860 Austrians, the remaining number of foreign-born amounting to about 750. By far a large majority of the inhabitants are of the better class citizens—mechanics, etc., and although a fairly large percentage are foreign-born yet these foreign-born are, in the main, intelligent.

Niagara Falls, like many other cities in New York State, especially in the western part of the state, is quite enthusiastic about home rule, and has to a certain extent considered interference from the central state authorities at Albany as being unnecessary and onerous. In this connection it is interesting to note the typhoid rates for Niagara Falls:

Deaths per 100,000.

1900–5.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
141.5	154.5	126.0	87.1	74.9	97.9	187.	71.5	29.4

An investigation of the sanitary conditions of the city of Niagara Falls was carried on by the Engineering Division of the State Department of Health during the summer of 1907, following which the Department urged

a new or filtered water supply. Apparently continuing to believe in the principle of home rule no attention was paid to these recommendations, and in 1910 another investigation followed and not only the city authorities but the people of Niagara Falls were warned of the danger of continuing to use the unfiltered river water for drinking purposes. It was not, however, until December, 1911, that filters were installed with the addition of hypochlorite treatment. The table shows a marked reduction in the death-rate per hundred thousand population since the installation of these filters.

History of the Epidemic.

The first compulsory vaccination and re-vaccination law went into effect in Japan in 1885. Notwithstanding the enactment of this law they record in Japan during the following three years 125,000 cases of smallpox, with a mortality of 25 per cent. In 1860 the legislature of the state of New York enacted a law which reads that "no child or person not vaccinated shall be admitted or received into any of the public schools of the state, and the trustees or other officers having in charge the management or control of the schools shall cause this law to be enforced." Notwithstanding this law there have occurred in New York State during the past seven* years an average of 613 cases of smallpox a year, the large majority of these cases occurring in adults. Both of these facts have led the opponents of vaccination to conclude that vaccination did not protect against smallpox.

A review of the facts connected with the Niagara Falls epidemic explains to a certain degree the reason for smallpox continuing to be present in New York State.

On April 18, 1912, the health officer of Niagara Falls asked for assistance in the differential diagnosis of smallpox from chickenpox. The following day a diagnostician from the State Department of Health diagnosed five cases of smallpox in one family, none of whom had ever been vaccinated. The original case in this family was discovered in March in a little child ill with what was believed to be chickenpox. The health officer could not trace the source of the first case. The family lived near the railroad yards, and the child was said to have played with Italians who passed by to and from their work. Two cases across the way developed from this original focus. Chickenpox was not a reportable disease, and chickenpox had been prevalent at the Falls.

On May 9 a diagnostician was again sent to Niagara Falls and found two girls aged 9 and 11 who attended the same school that the children in the previously mentioned family did. Neither of these children had ever been vaccinated.

It was well known to the State Department of Health that Niagara Falls was an anti-vaccination center and that serious danger existed of a

*See Table No. 18.

large number of cases occurring there. It was also known that this sentiment would cause serious difficulty in controlling an epidemic.

The following instructions were given to the health officer May 9:

To vaccinate all persons directly exposed, or else quarantine them for at least two weeks.

To notify the managers of shops and factories where persons had been exposed to require such persons to be vaccinated before they returned to work.

Although the health officer was well-intentioned, it took exactly 20 months to carry out these two suggestions. These instructions were given to the health officer, and no further requests for assistance were made until the following year, although cases were reported to the State Department of Health each month during the remainder of the year. No general vaccinations were performed, and no serious effort made to control the disease, and only a few of the cases were sent to the quarantine hospital.

The next news about smallpox at Niagara Falls was received from the State Commissioner of Health of Pennsylvania, who wrote on January 14, 1913, that two men with smallpox had come to Centre County, Pennsylvania, from Niagara Falls. On January 23 another case was reported from Lewisburg, Pa., that had been traveling in Western New York.

On January 25, 1913, the health officer of Niagara Falls was notified of these facts, but no action was taken owing to a new health officer being appointed about February 1, 1913.

On February 21, 1913, the new health officer reported to the State Department that there were ten cases of smallpox in the city, and asked for assistance. A diagnostician was again sent and he found two positive cases in the quarantine hospital.

Early in the year an article appeared in a Memphis paper urging vaccination, and written by W. A. Evans of the Chicago *Tribune*, who referred to Niagara Falls as a "Plague spot" and stated that there were eight new cases of smallpox reported the week ending February 26. This statement was apparently challenged by the Christian Science Committee on Publications of the state of Tennessee, who telegraphed the mayor of Niagara Falls asking if the statements were true, and received no answer. This Committee then telegraphed the president of the Board of Education of Niagara Falls and received the following reply: "Statement that smallpox is epidemic in Niagara Falls absolutely without foundation. Not a single case of the disease in the city." This statement was written when the health officer knew of ten cases of smallpox in the city.

The State Department of Health again made recommendations to the health officer, but no definite action was taken, and not until on November 26, 1913, was another request received for assistance, and again cases of both smallpox and chickenpox were found.

On December 14, 1913, another request was made for assistance, apparently as a result of a threat of quarantine made by Buffalo. For the first time since the cases developed at Niagara Falls the physicians were assembled and urged to coöperate and vaccinate exposed persons. The physicians met with the Board of Health, but no definite instructions were formulated by either state or local department at that time.

On the 19th of December and again on the 28th and 29th the State Department of Health sent a representative who found the situation much the same—new cases constantly occurring and but little activity among the city fathers except talk. The health officer, an informed and competent physician, was utterly unable to do more than have several schools closed, and the year 1913 closed with little having been accomplished.

On January 3, 1914, a letter was sent to the leading citizens urging the importance of vaccination, and the leading manufacturers were persuaded to urge their employees to be vaccinated. In one instance where a case of smallpox was found in a factory the manager offered free vaccination or two weeks lay-off without pay, and only seven out of 97 employees accepted vaccination.

On January 6 there were 51 active cases, most of whom were in their own homes. On this day the mayor, the health officer, the Health Board, and Industrial Commission held a conference with the representative of the State Health Department, and the department's representative urged that nurses be employed to inspect the schools and factories and that every suspicious case be quarantined, and that this quarantine be rigidly maintained, and that special physicians be designated for vaccination.

By the 9th of January some actual progressive work was being performed; house quarantine enforced by special officers; doctors investigating and giving free vaccinations (over 700 vaccinated this day); 17 nurses making daily visits to schools, factories and homes; a daily citizens' meeting with the Health Board to discuss the situation, and an earnest desire on the part of the manufacturers to have the epidemic controlled.

Notwithstanding all these efforts "the man on the street" said that there was no smallpox in Niagara Falls; that vaccination was killing lots of people; anti-vaccination literature was freely distributed, and the local papers were openly or tacitly sympathetic to the anti-vaccinationists.

On January 12 there were 75 known cases, with but few of these in the quarantine hospital, which with accommodations for 30 patients had never been filled. Vaccination was proceeding—about 500 a day.

Smallpox began to be reported from varying cities, towns and villages nearby.

By January 19 the quarantine hospital was filled, and 66 houses were under quarantine. In most of the houses where cases had occurred, secon-

dary cases followed, vaccination having been refused, and 110 special police were employed.

On January 20 there was a change of administration at Albany, which had for some days been pending, and Dr. Hermann M. Biggs was appointed Commissioner of Health, and the day following a special representative of the State Department was authorized to go to Niagara Falls and take entire charge of the situation. On January 27 more urgent measures were adopted. The local Department of Education refused to do anything in regard to the compulsory vaccination law.

The attention of the local authorities was called to the fact that the health officer had, by city ordinance, power to remove any case of smallpox from his home to the quarantine hospital. The city attorney, however, openly advised against this procedure as being illegal and unconstitutional until the attorney general of the state handed down an opinion that this city ordinance was legal and constitutional.

On January 28, 1914, a bulletin was issued to the health officers of New York State, calling their attention to the amount of smallpox in New York State.

On the same day the following telegram was sent to Dr. Edward Clark, the State Department's representative at Niagara Falls:

"More radical measures must be taken in Niagara Falls to suppress the epidemic of smallpox. The people of other portions of the state must be protected against the follies of any local community at whatever cost may be necessary.

"I should much prefer that the Department should act in coöperation with the local authorities rather than issue direct orders for enforcement.

"In my judgment the following measures should be immediately adopted by the local authorities:

"1. Close all places of public assemblage; churches, theaters, dance halls, moving picture shows, similar places of entertainment, public libraries, etcetera.

"2. Close the public schools, or exclude from attendance all unvaccinated school children.

"3. Close the factories and workshops of all kinds, or exclude all unvaccinated employees.

"4. Close the hotels, or require the vaccination of employees.

"5. Enforce rigid quarantine against all houses containing smallpox cases and all exposed and unvaccinated persons.

"6. Remove to isolation hospital all cases of smallpox so far as accommodations permit.

"7. Enforce strictly all the provisions of the Sanitary Code of the City of Niagara Falls.

"Kindly request the mayor to call a meeting of the local authorities, prominent business men, and manufacturers and present this telegram to them.

"It would be most unfortunate, in my judgment, from all points of view, if it should become necessary to absolutely isolate Niagara Falls from its relations with other portions of the country.

"Kindly advise me what decision is reached and what action is taken. Do you desire further assistance?

H. M. Biggs."

On January 29 the mayor, health officer, and business men held a meeting and unanimously adopted a series of resolutions embodying all the recommendations of the State Department. These resolutions were also adopted by the Niagara Falls Board of Health.

A large number of persons in Niagara Falls still believed that smallpox was not present; that it was all a bluff, and vaccination was being enforced because the doctors needed business. And others believed the commissioner's suggestion of January 28 that it might become necessary to isolate Niagara Falls from the rest of the world, was also a bluff.

The State Department of Health had received assurances from the railroads passing through Niagara Falls that notices would be placed in all stations in New York, and warnings in all passenger cars whenever desired, and that if necessary no passengers would be allowed to depart from or alight at Niagara Falls.

Notices were printed and in readiness for distribution January 31, 1914, as follows:

WARNING! SMALLPOX!

HERMANN M. BIGGS, M. D.,
Commissioner.

NEW YORK
STATE DEPARTMENT OF HEALTH
ALBANY

MR. A. H. SMITH, *President, New York Central Railroad, Grand Central Terminal, New York City.*

Dear Sir: There exists at the present time an epidemic of

SMALLPOX AT NIAGARA FALLS

due to the local prejudice against vaccination. There is serious danger of the transmission of the disease along the lines of the railroad to all parts of this state and to other states. There is also danger of infection of the railroad employees. Before taking any more drastic action in relation to the existing situation, we wish to ask the assistance and coöperation of the officers of the transportation lines running into Niagara Falls in respect to the following measures:

1. That the officers of your company use every means to induce your employees, especially on the divisions west of Syracuse, to protect themselves from infection by immediate vaccination.

2. That in case of illness of any employee living in Niagara Falls, notification be immediately sent to the health officer of the city.

3. That your employees be warned to mingle as little as possible with the citizens of Niagara Falls.

4. That all persons who have no business to transact and who are not entering or leaving trains at Niagara Falls be excluded from the station.

5. That a notice be hung at the end of every passenger car on every train stopping at Niagara Falls, warning passengers of the existence of smallpox and cautioning them against stopping in Niagara Falls, unless they have been protected by a recent and successful vaccination.

There are at the present time about 133 cases of smallpox at Niagara Falls. We hope by the adoption of active measures to prevent further extension of the disease, and we ask for your assistance and coöperation to this end. Notices for posting in railroad stations are being forwarded.

Very sincerely yours,
HERMANN M. BIGGS, *Commissioner of Health, New York State.*

WARNING

SMALLPOX

EXISTS IN EPIDEMIC FORM IN NIAGARA FALLS.

Passengers are warned not to stop there unless they have been protected by recent and successful vaccination.

BY ORDER OF THE NEW YORK STATE DEPARTMENT OF HEALTH.

Fully realizing the incalculable monetary damage that such a procedure would cause their city, redoubled efforts were made by the business men to secure the vaccination of their employees and all other persons.

The commissioner, having received assurances from the mayor, board of health, and business men, that his recommendations would be carried out to the letter, the order was rescinded.

The activity of the Niagara Falls authorities was made the more zealous because the Dominion had quarantined Niagara Falls and had guards at the Canadian end of the bridge over Niagara River, and allowed no one to enter on foot, vehicle or trolley without a vaccination certificate.

On February 5, 1914, the following official bulletin was issued to all the health officers of the state, giving detailed directions for the control of smallpox, as follows:

"Smallpox now exists in epidemic form in Niagara Falls, and new cases in nearby places are almost daily coming to the attention of the department. Twelve cases in nearby outlying towns which had not been reported were discovered by a representative of the department last Thursday, and on Friday in two other towns, eight were found which had been diagnosed as chickenpox. Some of these were of a severe type and recovery is uncertain.

"This condition of affairs must not continue. Every case of smallpox or chickenpox, as well as every other case of any reportable disease, *must be promptly reported* to the local health officer, as required by law.

"You are hereby directed to at once take active measures to secure the prompt report of every case of infectious disease occurring in the territory under your jurisdiction, and to report the same to the State Department of Health as required by law. It is the duty of every physician, nurse, teacher, clergyman, householder, employer, police officer, hotel or lodging house keeper, head of a family or other person who has knowledge of any such case to report it to the health officer.

"Upon being informed of the existence of a case of any contagious disease you are further directed to at once adopt such measures as are necessary to prevent its spread.

"In dealing with *smallpox* you are directed to take the following action:

"1. Every case diagnosed as smallpox shall be immediately isolated and kept isolated until the patient has fully recovered and all danger of the transmission of the disease has passed. If an isolation hospital is available within your jurisdiction every such case must be immediately removed there. Health officers have full power to cause such removal by force.

"2. Every suspected case of smallpox should be isolated until a definite diagnosis has been made, and all exposed persons should be at once vaccinated.

"3. Every person known to have been exposed to smallpox (contacts) should be immediately vaccinated. If the vaccination is within 48 hours of the time of the *first* exposure the person may be required to report for observation daily to the health officer, or to someone designated by him, until the vaccination takes or until a period of sixteen days from the *last* exposure has elapsed. If the first vaccination is not successful, all such persons should be revaccinated. These persons need not be quarantined if they are seen daily, and immediately isolated on the appearance of any symptoms.

4. "All persons exposed to smallpox who have *not* been recently successfully vaccinated and whose first exposure antedates forty-eight hours and who are immediately vaccinated, should be isolated and quarantined until the vaccination has definitely taken (for at least one week), or if the vaccination fails, until the full period of incubation of smallpox (sixteen days from the last exposure) has elapsed.

"5. All persons exposed to smallpox, who have been vaccinated recently with a successful result, may be immediately discharged from observation.

"6. All persons known to have been exposed to smallpox and who refuse vaccination, should be strictly quarantined for sixteen days from the date of the last exposure.

"7. A record should be kept of the names and addresses of all exposed persons, the action taken with reference to each, the date of vaccination, the dates of observation, with notes of the results of vaccination, (whether successful or not), and when revaccination is done, the date of this.

"8. When a person suffering from smallpox is quarantined in a house or an apartment a record should be made of the name and age of every person living in the house and these quarantined, and their presence in the house should be verified daily.

"9. If any person under quarantine escapes from observation, every effort should be made to determine where such person has gone and immediate notifications made to the Department of Health at Albany.

"10. During the prevalence of smallpox in the state the diagnosis of every case of chickenpox reported to you should be confirmed by a representative of the local health department, and such cases should be immediately reported to the Department of Health at Albany. In any case where the diagnosis is doubtful the patient should be isolated immediately, all exposed persons should be vaccinated, and the State Department of Health notified.

"11. You are requested to make a weekly report to the Department of Health of the number of vaccinations performed by you and also the number performed by others in your district so far as known to you.

"12. If the law excluding unvaccinated persons, whether school children or teachers, from the schools under your jurisdiction has not been enforced, you are requested to notify the State Department of Health and to direct the attention of the school authorities of the district to this fact.

"A campaign of education concerning the benefits of successful vaccination should be inaugurated in your district and carried on with vigor. This can only be accomplished by a strict compliance with these directions and by the practice of general vaccination, especially of all persons living in those sections of the state where smallpox is prevailing.

H. M. Biggs."

On February 7 one factory in Niagara Falls still refused to obey the recommendation that it be closed or its employees be vaccinated, and again it was necessary to threaten isolation of the city.

On February 9 the following notice was posted at the above mentioned factory:

"IMPORTANT!

"Tomorrow—Wednesday morning, be sure and bring certificates of vaccination or evidence of vaccination which it will be necessary for you to have before you can start work.

"Automatic Dept., Storehouse, Engine Room employees will present certificates at Automatic door, all other employees at general entrance on Highland Avenue.

"There can be no exceptions made."

By February 12 it was estimated that 18,923 vaccinations had been performed, and it was expected that there would soon be a diminution of the number of cases.

January 30 . . . . . 76 houses quarantined.
February 6 . . . . . 61 houses quarantined.
February 13 . . . . . 35 houses quarantined.

For the first time an appreciable improvement.

On February 17 a delegation consisting of the mayor of Niagara Falls and seven business men came to Albany asking for the removal of restrictions and that less publicity be given to smallpox in Niagara Falls, to which request the commissioner made the following answer:

"The policy the department will pursue is one of complete publicity. That is the only way in which we can hope to obtain and retain the confidence of the public. If we say that there is no danger in any given situation we want the public to believe us. If we say that wholesale vaccination is necessary we want to have our advice followed. Any other policy than that of absolute honesty and full and frank publicity in public health work is ruinous. If you have smallpox, admit it and let other people know it. Through concealment you delude yourselves and lay others open to danger from which they cannot protect themselves. That is why we have given to the press such communications as we have found necessary to send to Niagara Falls."

On February 25 there were 15 houses quarantined, containing 39 cases; 15 in hospital.

February 26, 13 houses quarantined. Total 48 cases.
February 27, 12 houses quarantined. Total 46 cases.
February 28, 12 houses quarantined. Total 43 cases.
March 3, 9 houses quarantined. Total 33 cases.
March 4, 7 houses quarantined. Total 25 cases.
March 5, 7 houses quarantined. Total 23 cases.
March 6 (total vaccinations to date—25,184.)
March 8, 6 houses quarantined. Total 17 cases.
March 9, 4 houses quarantined. Total 11 cases.
March 10 (churches and places of public assemblage allowed to open.)
March 10, 3 houses quarantined. Total 13 cases.
March 11, 3 houses quarantined. (1 new case reported.) Total 13 cases.
March 12, 2 houses quarantined. (Public vaccination station closed.) Total 12 cases.
March 13, 2 houses quarantined. Total 12 cases.
March 15, 1 house quarantined. Total 10 cases.

March 16, 1 house quarantined. Total 10 cases.
March 17, 1 house quarantined. Total 7 cases.
March 18, 0 houses quarantined. Total 6 cases.
March 26, 0 houses quarantined. Total 1 case.
March 27, no new case since the 11th.

The Niagara *Press* on this date stated that there had been a few cases of Cuban itch and chickenpox at Niagara Falls, but no smallpox.

On March 30 the last case was released from the quarantine hospital.

One case was reported early in April, and on April 28th one case was reported, the last to date.

Type of Cases.

The general type of cases was mild and discrete. There were few patients who were really seriously ill and there was only one death. No definite attempt was made to determine the actual period of incubation, but in those cases which were definitely noted it was found that from 12 to 15 days was the usual period after known exposure.

Clinical Symptoms.

The clinical symptoms were very similar to those commonly described. The prodromal symptoms of headache were usually frequent and almost always severe backache, and a feeling of malaise, lasting from 2 to 3 days, and occasionally nausea and vomiting and a slight temperature. With the onset of the eruption there was an abatement of the severe backache and a diminution of the fever, and many patients felt well enough to go out and were up and about and frequently were found at work during the eruptive stage.

The large majority of cases was discrete, although there were a number of confluent and semi-confluent cases. No cases of hemorrhagic type were observed. The one patient that died had a septic condition.

Statistical.

Reported cases of smallpox in New York State by months from January 1908 to November 27, 1914:

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1908	265	71	108	49	48	59	8	4	5	92	55	20	784
1909	63	72	32	33	42	25	16	12	2	7	29	53	386
1910	51	50	69	61	55	41	10	10	1	1	2	2	353
1911	7	5	6	5	34	33	25	14	9	9	24	170	341
1912	178	88	54	33	41	24	35	22	44	48	192	135	894
1913	67	64	94	129	87	77	72	27	24	21	73	88	823
1914	322	251	59	37	38	11	3	1	3	2	7		734
													4,315

Reported cases of smallpox in Niagara Falls from 1908 to 1914, according to date of report:

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1908	1	0	1	6	0	2	0	0	0	0	0	0
1909	0	1	0	1	0	0	0	0	0	0	0	1
1910	4	0	0	0	4	1	0	0	0	0	0	1
1911	1	0	0	1	0	0	0	0	0	0	0	0
1912	0	0	0	9	10	5	13	16	3	1	2	9
1913	9	18	3	3	9	7	4	6	5	9	66	57
1914	204	121	10	2	1	0	0	0	0	0	1	

In the year 1908 there were 10 cases of smallpox in Niagara Falls; 3 in 1909; 10 in 1910, and 2 in 1911, an average of 6.25 per year, or approximately 20 per hundred thousand per year, the population of Niagara Falls at that time being 30,000. This would have meant in New York City 1,000 cases per year, or 2,000 cases per year throughout the state, during which time the number of cases of smallpox throughout the state averaged less than 400.

In 1912 there were 66 cases of smallpox reported from Niagara Falls, or 204 per hundred thousand, which in New York City would mean 10,400 cases, or throughout the state 19,500 cases during that year, whereas the total number of cases in 1912 in the state of New York was 894.

In 1913 there were 176 cases of smallpox reported from Niagara Falls, or 51.7 per hundred thousand, which would mean 26,800 cases for New York City, or 50,200 for the whole state, whereas there actually were for the entire state 823 cases of smallpox reported.

During the year 1914 there were reported from Niagara Falls 339 cases of smallpox, the last case being reported April 30, 1914, that is, 965 per hundred thousand, or 51,800 cases for New York City, or 95,500 cases for New York State, whereas there actually were reported in New York State 734 cases.

From the first of January 1912 until the 30th of April 1914 there were reported from Niagara Falls 550 cases of smallpox. Of this number 286 were between the ages of 15 and 45, or 52 per cent. Under 5 years there were 33 cases, or 6 per cent. The complete tabulation of the age groups is as follows:

	1912	1913	1914
Under 1 year	1	2	2
1 to 5 years	3	9	16
5 to 15 years	21	91	64
15 to 45 years	31	110	145
45 and over	11	13	17
Unknown	1	3	10
Total	68	228	254

Occupations.

Of these 550 cases 33 were in children under 5 years; 190 were in school children; 52 in housewives; 22 in laborers; 71 in mechanics or operators in factories; 6 among city employees; 3 in mail carriers but employed in the post-office; 8 in railway employees; 2 in teachers; 26 miscellaneous occupations; 8 employees in business occupations, and 112 whose occupations were not given.

Nationality.

It was a matter of extreme interest to note that in almost every instance the individual affected was a native-born American, and usually of the more intelligent class. Unfortunately the cards for reporting communicable diseases did not ask the question of nationality, so it is impossible to give definitely the number of cases among foreigners, but it was quite evident to all who had anything to do with the epidemic that it was chiefly among the better class American citizens.

Vaccination.

Reference has already been made to the school law enacted in 1860, yet this law has practically been a dead letter and has never been enforced with any degree of vigor. A serious attempt was made to enforce it in the city of Olean in 1912, but the citizens of Olean made such a strong protest against it that the then Commissioner of Education did not enforce it.

The records of the cases of smallpox reported to the State Department of Health from 1908 to date show the following:

That of the 784 cases reported in 1908, 508 or 64.7 per cent. were never vaccinated. In 1909 of the 386 cases reported, 333 or 86.2 per cent. were never vaccinated. In 1910 of the 353 cases reported, 246 or 69.6 per cent. were never vaccinated.

*Total number of cases reported 1908–1914	4,315
Number never vaccinated	2,886
Per cent	73
Vaccinated 5 or more years previously	368
Per cent	9
No data	408
Per cent	10
Per cent. vaccinated within 5 years	8

*Omitting 341 reported in 1911.

Of the 550 cases of smallpox reported from Niagara Falls during the years 1912, 1913 and 1914, 483 cases or 87 per cent. had never been vaccinated; 26 or 4.6 per cent. had been vaccinated more than five years ago. Out of the 550 cases only 5 gave a history of having been vaccinated within five years, or .9 of one per cent.

Strong anti-vaccination sentiment exists in certain parts of New York

State, especially in the western part of the state in the counties of Niagara, Chautauqua and Cattaraugus, the cities of Niagara Falls and Olean having carried on for years a strong anti-vaccination campaign.

Marked assistance to the campaign has been rendered by the Anti-vaccination League of America, of which Mr. Chas. M. Higgins of Brooklyn is treasurer. Dr. John W. Hodge of Niagara Falls, a well-known physician in that locality, with a large practice, is also an ardent anti-vaccinationist, and during the last twenty years, as far as one can learn, practically no vaccination has been performed in Niagara Falls. This has been well known to the officials of the New York State Department of Health, and an epidemic of smallpox such as occurred in Niagara Falls had long been heralded.

The attitude of the citizens, and especially of the city officials, made the suppression of the epidemic an extremely difficult task, the president of the Board of Education and the city attorney being strong anti-vaccinationists, and the anti-vaccination sentiment being particularly strong among the better class of American citizens. Practically no headway was made against the epidemic until the business interests of the city realized that the epidemic was assuming serious proportions and cases were developing not only in the surrounding towns and communities, but that local epidemics were developing in adjacent counties, and that the Commissioner of Health would be compelled to quarantine Niagara Falls from the rest of the state, and as quarantine had already been established by the Province of Ontario against Niagara Falls that there would be serious economic loss if active measures were not taken to suppress the epidemic. Pressure was then brought to bear upon the city authorities, and the recommendations made by the State Commissioner of Health were energetically carried out.

Two weeks after this there was a marked diminution in the number of new cases developing, due chiefly to two facts—one, an opinion by the attorney general that the Sanitary Code of Niagara Falls providing that all cases of smallpox should be promptly removed to the quarantine hospital was entirely constitutional and legal; and second, that general vaccination was being performed.

One large manufacturing concern informed the representative of the State Department in January that 50 per cent. of its employees had been vaccinated and that it was not possible to have any more vaccinated. Three weeks later this same concern showed satisfactory evidence that all but three of their employees had been vaccinated, 300 or 400 having been vaccinated. Of these 3 one was at home sick; one had had smallpox, and the third was on the road as a traveling salesman.

Extension of Smallpox from Niagara Falls.

During the years 1912 and 1913 there was apparently no definite extension from Niagara Falls, although a few cases of smallpox did occur in scattered localities having definitely become infected in Niagara Falls. With the beginning of the year 1914 new centers of infection were reported throughout the western part of the state. A few cases occurred in points in Pennsylvania and in New York City. Several new foci developed, which were readily traced to Niagara Falls, and others traced only with difficulty. In one instance a barber escaped from quarantine in Niagara Falls and continued to pursue his trade in a neighboring village, and nearly all of his customers in succession developed smallpox.

Another instance was the meeting of a religious sect known as the Holy Rollers, who met in a county and at this gathering were several residents of Niagara Falls. Two weeks after this meeting a large number of the persons who were at this meeting developed smallpox.

At a third gathering in Chautauqua County there were a large number of persons who were exposed at the same time. These persons came from many different parts of the state and were all exposed to one of their members who had active smallpox at the time of the meeting. This became known to a newly appointed representative of the State Department of Health, who was able to secure immediately after the meeting the names and addresses of all the persons at the meeting, and who then notified the health officer of the locality in which each individual lived, advising immediate vaccination, which was performed in the majority of the cases. At all events, no further cases developed as a result of this exposure.

No less than 21 foci occurred, which could be definitely traced to Niagara Falls. This is well shown upon a map of New York State.

Summary.

1. Smallpox had been present from time to time in Niagara Falls since 1908. (Records not sent to State Department of Health previous to 1908.)
2. Niagara Falls was well known to be an unvaccinated city.
3. Chickenpox was not reported to the State Department of Health until May 1914.
4. Smallpox was endemic in Niagara Falls from April 1912 until May 1914.
5. Chickenpox was said to be present in Niagara Falls in 1912.
6. In the years 1913 and 1914 the existence of smallpox was denied by many intelligent persons in Niagara Falls.
7. The Sanitary Code required the removal of all cases of smallpox to the quarantine hospital. Owing to the attitude of the city authorities this city ordinance could not be enforced.

SMALLPOX CENTERS IN NEW YORK STATE IN 1914.

———Centers directly traced to Niagara Falls
.....Centers indirectly traced to Niagara Falls
. Centers, source of infection unknown

8. General vaccination did not begin until the second week of January 1914.

9. Cases of smallpox were not removed from their homes, nor was quarantine of houses rigidly enforced until January 1914.

10. Unvaccinated contacts in the same houses invariably contracted smallpox.

11. Vaccinated contacts did not develop smallpox.

12. Three weeks after compulsory removal and general vaccination began there was a steady diminution of the number of new cases reported.

13. General vaccination and immediate isolation, with the vaccination of contacts, is the only adequate method of controlling smallpox.

A word of appreciation is due Dr. F. M. Meader, Director of the Division of Communicable Diseases, and to Drs. Edward Clark, Chas. S. Prest and Otto R. Eichel, Sanitary Supervisors, for access to their reports, and assistance in preparing this article.

A RURAL SANITARY SURVEY AND WHAT IT REVEALS.

OSCAR DOWLING, M. D.,
President Louisiana State Board of Health, New Orleans, La.

Read before the General Sessions, American Public Health Association, Jacksonville, Fla., November 30–December 4, 1914.

IT IS with some diffidence I attempt a brief discussion of the topic, "A Rural Sanitary Survey and What It Reveals." Because so great in scope, at best only a few phases of the subject can be presented. One, therefore, may be taken to task, and rightly, for apparent emphasis on aspects discussed, and quite as logically censured for many things unsaid. But I trust you will realize I am endeavoring to portray the features of rural life which appeal to the sanitary officer as he makes his annual round in the counties of his jurisdiction.

Having lived a number of years in each of four of the Southern states, with a physician and health officer's opportunity for observation, I am familiar with the conditions which prevail largely in the rural districts of the section. I hope, in giving these impressions from personal experience, you will not think me pessimistic or disloyal to my own people.

On a recent tour of inspection early one cold morning in December, I stopped before the door—there was no gate—of a house a few yards back from the road. Only two of the rooms were roofed and weatherboarded, two others and a gallery being yet a skeleton; curtains of old blankets, unspeakably dirty, hung in the doors, while one side of the kitchen was open save for a curtain of cheap, thin calico, strung on a cord about four feet from the floor. The call of a stranger brought to the door and from around the house seemingly a dozen children and an untidy, hard-featured woman rather young in years. All were bare-footed and scantily clad. One child was munching a raw turnip and another, breakfasting, I assumed, on a cold sweet potato. Curious to know something of the manner of living of this family, I spoke to the children in a friendly way. They were shy, if not sullen, and the mother even less inclined to be communicative. She had a dull, listless expression and an air of apathy. I asked how long since they had begun to build. "Two years." "He" couldn't "get much time" to work at home. As there was a dearth of building material in sight, I thought there might be other reasons. Where had she lived before? She pointed to a hovel across the road, a dilapidated shack of one room unfit for a stable. There all her children had been born except the two youngest—she had been married seven years, had six children and it was apparent the stork's visit was not many weeks off. The others were "his."

"He was married before, twice." What did "he" do? "Logging when he could get it." Did the older children go to school? "No," they had no shoes, no books, and the oldest boy at home "had to help." "He cut wood." Had they a garden? "Yes, turnips" and some potatoes "to dig." What kind of water did they use. "A well." Was it good water? "No, sorter muddy." Were they ever sick? "Yes, chills." Did they send for a doctor? "No." I did not wonder at the unfriendliness of the children and the forlorn apathy of the woman. Sordid poverty, hunger and cold, were not conducive to cheerfulness, even on a bright winter morning. Do you think there are many homes like this? Drive from the highways into the unfrequented roads of the backwoods section and you will realize they are not few.

Having a week's work over a rather large area remote from a town of any size, to save time I elected to spend three days in one neighborhood and the remaining four in others adjoining, about ten miles distant, each in a different direction. The experiences of the week gave me an insight into the family life of a large portion of that section of the state.

The land was rated poor and in general cultivated by the owner. The farms were from forty to a hundred acres and poorly equipped. At the place which I selected as headquarters, every acre of cleared land—about thirty in all—was planted in cotton; around the house, there were three acres uncultivated. These had been set apart for a garden and pasture, but there were no vegetables except sweet potatoes and turnip greens and no grass except that, which of its own accord, had persisted in growing. There was a good cistern—new, unscreened—but no other convenience either within the house or outside. Six children slept in one of the three bedrooms; this was situated between two other rooms; it had two windows and a door opening on the gallery, but all these were closed and furniture placed against them. The only ventilation was by means of doors which opened into the other sleeping rooms. One room served as kitchen and dining room. Clothes were hung along the walls and behind the beds. Only two beds were furnished with mosquito bars.

The stock on this farm consisted of two horses, one mule and a number of "razor backs" (hogs) that lived on acorns in the woods and the fields adjoining the house. There were a few chickens but no cow.

Taking breakfast and supper here for three days, I had opportunity to study the character of the meals and the cooking. It was in September. On Sunday the menu consisted of chicken pie, sweet potatoes, turnips and dried apple pie with black coffee. At every other meal there were fresh pork and bread or potatoes; once, at night, a dish of greens, and once preserves. Fried pork was the main staple. I am quite sure this was cooked in my honor and that the family, when alone, lived largely on bread, potatoes and coffee. It seems pertinent to digress

here long enough to say that the father of this family, though he chewed tobacco in huge quantities every day, seemed as "hardy as a pine knot," but he was the only one. Every child and the grown girls were anæmic and the baby was "chilling," the logical consequence of being constantly surrounded by a swarm of mosquitoes day and night.

If the members of this family desired to go "to town," or to a gathering three or four miles distant, they went in the wagon. Sometimes the girls' beaux took them in a buggy to church "meetings." I asked one morning how to get to a neighborhood about ten miles distant and not one in the family knew anything of the roads which led in that direction.

One evening, eleven of us went in the wagon to a meeting in a church two miles away. On the return trip we lost the "piney woods" road three times. One of the boys confessed he had purposely broken the only lantern they owned, his reason being he was "mad with the girls."

This family was thought of by many of the "settlement" as "well to do." The children went to school, the girls had lace waists and the old man always a plentiful supply of plug tobacco. There was prestige, too, in the fact that one of the young ladies sent "notes" to the county paper.

The other homes of this section where I spent the night and had two meals, supper and breakfast, were similar in type to the one described. Conveniences were lacking and the meals without variety and poorly cooked.

On a similar trip later in the season, I had occasion to go even into more remote neighborhoods. One of the homes in which I spent the night was an illustration of another type of rural residents. The family consisted of the man and his wife who fifty years ago had built their cabin home among the sand hills which overlook the river. The log foundation of the two original rooms was as solid as the day it was laid; through the cracks between the logs which formed the sides of the house the cold raw wind came in gusts—as it had for half a century. Two rooms and a hall had been added, but they were yet unfinished and there was no provision for heating except one fireplace in one room. The kitchen stove was the only piece of equipment which could be called a convenience. The meals were execrable and cleanliness evidently an unknown concept. The girls and boys reared in this comfortless home had gone from the roof tree. Nothing on or around the place looked virile except the old couple themselves and one magnificent pear tree. They said the old man was wealthy. I did not see the source of his wealth—stock raised in the river bottoms—but I wondered at the bondage of habit which had kept these people from realizing the unnecessary hardships daily endured.

It is a pleasure to add that on another trip of ten days I had opportunity to see the typical farmhouse of a different section where land is better and equipment more adequate. Food was more plentiful, in greater variety and

better cooked and served, but even in these homes—I saw over twenty—there were no household conveniences to lighten labor, and a bath room in one only.

Do you see the pictures? The man, ignorant, shiftless, irresponsible, untrained,—husband to a third wife and father of many children? The home—if such it can be called—without comforts, the wife and children without sufficient food and clothing and, perhaps most important, without hope of betterment.

Do you see as I saw them, the second family another type, poorly nourished, bare-footed, picking cotton in the early morning that cheap finery might be bought "at the store." Drudgery in the home, the mother cooking, cleaning, sewing, washing, ironing, bringing water from the barnyard and wood from beyond the pasture and keeping in mind the two young children, one of whom must have four doses daily of the patent medicine on the mantel. With the ideal, not comfort but show, the girls would pick cotton in the part of the field where they could not be seen, but they would not plant and tend a garden. They would gossip about the ignorance of their neighbors, but would not help the younger children with lessons.

And the other home—a bank account, but no curtains; food in plenty, but gross ignorance in its preparation and serving; opportunity for construction of a comfortable home and sanitary appurtenances and no desire for surroundings other than those which habit alone made endurable?

Do you see the home of the better type with the parlor-bedroom with an organ, a gaudy lamp and a cuckoo clock, with pretensions of many kinds, yet only a tin pan on the back shelf and a bowl and pitcher on the front gallery as potential bathing facilities? With food cooked in quantities, but covered with a swarm of flies?

For those of us who attend meetings such as this, who are accustomed to the luxury of a daily bath, who it may be have never spent a night in a shed-room with windows and doors shut; who never had to draw thirty buckets of water in a day, or cut enough kindling to start the morning fire, these pictures may not mean anything. We cannot sense the inconveniences of such a manner of life. But that these conditions, unfortunately for public health and individual comfort, widely exist is undoubtedly true. The rural sanitary survey reveals features which I have not touched. In many sections a water supply from a shallow well, a spring in the hollow, or a cistern never cleaned; houses which in construction violate every principle of comfort and hygiene; an appalling lack of conveniences which common decency requires, a food régime which is as poor as ignorance can make it, and a faith in "cure-alls" beyond belief.

We might as well face the facts of a survey. It reveals the stable yard and other filthy conditions, breeding places of flies; the well in the worst

possible situation as to drainage; no closets; little, if any, provision for personal privacy or personal cleanliness, and habits which make for communication of disease from one member of the family to another.

This is a condition. For us it matters not whether there are a great number, or a minority of people, leading this manner of life. Our obligation is to seek to remedy; to get at the root and aid in a substitution of ideals and standards which will lift to a higher plane not one class, but all. No easy task and one not to be accomplished in a generation.

It is impossible within the limits of this paper, as I have already suggested, to discuss the constructive phases of this condition. They are economic and social and in a few localities, racial, because of difference in stock inheritance and traditions.

It is evident that American rural life has been for some time in a state of transition. The oldtime pioneer farmer is passing; cheap lands are disappearing. As compared with very early days the farm population in some sections is better housed, better fed, better educated and informed, and provided with better implements and agencies with which to work. Farm women, too, in some states, have less arduous labor than that which formerly fell to their lot. Throughout the South there has not yet evolved a system of the small farmer, independent and well to do, neither does the old plantation system with its comforts and luxuries widely obtain. The South, more nearly in the beginning transitional stage than other sections, is therefore backward in production and transportation, therefore backward in methods of living.

Progress in the economic features of community life means progress in the social; they are interrelated; but advancement, either economic or social, depends on growth or evolution of many kinds. This precludes the hope that you or I or any organization can do very much toward the substitution and acceptance of higher standards by the adult population. In a democracy, the people accept whatever appeals to them as pleasing or useful; in a country governed by a monarch, acceptance of measures is implied. It is easier in the latter to abolish a custom detrimental to health or to substitute the sanitary for the insanitary. It doesn't matter so much in the older countries whether the people accept a new point of view; but here it is the all-important element of a change of action. Ideas direct activities and conduct. Ideals of life and action are among the most dynamic forms of ideas, therefore, the viewpoint of the resident of the rural home is the key to regeneration. It follows that the school is the institution to which we must look. Proper standards of living must be instilled into the minds of the children and training given in habits both of thought and action. In this our rural schools heretofore have failed. They did not recognize properly their whole function. At present, in many states, schools of the rural districts are being reorganized; effort

is being made to adapt the course, the teaching and the subject-matter to conditions. It will require long and patient experimentation before a system entirely fit can be established, for it must embody the cultural as well as the vocational; it must apply the universal to the unit; and it must keep the ultimate in sight yet not lose in practical adaptation to the needs of the present. No people in the world's history ever grappled with a greater problem.

As the schools grow progressively in adjustment, successive generations will have the higher standards. But while this transformation as an outlook is encouraging, we cannot but realize the dire need of present action. Why can we not teach the farmer and his wife the danger of the use of Peruna, Swamp Root, or Madam Winslow's Soothing Syrup? Why can we not reach the rural home with the good tidings of how to escape typhoid fever, hookworm disease, or malaria? If we can, the obligation is ours.

To work effectively there should be a constructive program. It must be based on knowledge of conditions as they exist. Every feature of the situation should be considered, this to include the psychology of the people. With adequate information, it would be possible to fit activities to conditions, for example, in one section, water; in another, malaria; in a third, food—whatever would disclose itself in the individual community as allied to any conscious social activity now in progress.

From records of surveys already made, we know in general of two points of attack, namely, the crass ignorance which obtains as to necessity for sanitary disposal of waste, and the almost universal habit of taking "dope" medicine. That there are hundreds of homes in the rural districts without a closet, sanitary or otherwise, is a fact. If we knew the why of this condition, we could prescribe the remedy. Once I asked an old gentleman, who had a good home and a large and profitable farm, why he had not built a closet. After an embarrassed silence he answered, "We don't have them things." He looked as if I had touched a subject beyond the bounds of respectability; as if he thought a man who was a church member should not speak of so vile a subject, yet in this home there were seven people, one being a young man, principal of the school, and another the young lady assistant-teacher. I have often wondered since if this isn't the attitude of mind of many people who have never known of the sanitary conveniences required by just common decency.

Whether this be true or not, it is certain that the average man and woman of the rural districts—and unfortunately, many people in villages, even cities—are absolutely ignorant of the menace to health implied in this form of carelessness. Moreover, they are not easily convinced. They think a spell of diarrhea in the early spring is as natural a phenomenon as the sprouting of seed planted; they think a case of typhoid now and then "the will of God"; they are sure the connection of flies with intestinal

disease too far-fetched for any one to believe and that doctors just lack common "horse" sense, which every man in the country is endowed with in greatest abundance. Again, the remedy lies in the training of children. No country school should be permitted to open until there is an adequate number of sanitary closets for both boys and girls. The children becoming accustomed to the physical comfort which results, will be effective teachers in the home. Doubtless, the law of every state gives to the proper school or health officer authority to require this, but they do not feel the obligation to enforce.

The patent nostrum evil is more difficult. In many instances, it is a habit, unconscious it may be, but nevertheless a habit. The man or the woman accustomed to the effect of a "dope" drink wants to believe that it is relieving pain or assisting nature. The pleasant sensation is an incident which lightens the routine of a dull, monotonous day. I see no way to put out of business these partners with poverty and death but to enlist in the cause the country editor. If he could be persuaded or made to cut out the advertisements of quack remedies and paid to run a half column each week of pertinent, reliable information on the so-called remedies most used in his territory, it would be effective to a degree. In Louisiana we have toured the state to take from the shelves of stores all medicines containing habit-forming drugs, except plantation stores distant from a town, and we insist that every drug store employ a registered pharmacist and keep a poison register. The control, however, of use of patent medicines is largely in the power of the practitioner. He is the main factor in the education of the people as to harmful results and folly of spending money for these concoctions of alcohol, burnt sugar and other substances with no therapeutic value.

It is conceded that among rural people leadership is notably lacking; there is no organization which can be relied on and no idea of social responsibility. Who then can lead in a movement for betterment? The county health officer and the doctor. It is within the authority of the health official to demand certain requirements in the interest of public health and for the protection of the individual. Health work touches intimately the family life in every phase; and it is so personal in many aspects that one with authority like the health officer, or with influence such as the physician has, can teach acceptably and by practicable application just what the farmer, his wife and his children need to know.

I believe much could be done through the villages to hasten the day of sanitary enlightenment in the country. In these small communities the proximity of the people gives to their actions something more than personal significance, yet often this is not recognized. Our villages are permitted to ignore their serious community problems. The streets are dirty, water and food unprotected. They do not obey the sanitary law, yet nothing

is done. The farmer, when he goes to the post-office, sees nothing to inspire him to improve conditions at his own home. If, on the contrary, he found in effect those regulations concerning health illustrated, he could not escape a lesson in hygiene.

Again, this is within the purview of the county health officer. But the broadening of the outlook of the resident of the rural district is not the obligation of one man or one profession. The duty is shared by the church, the sociologist, the teacher, the minister, the welfare worker, in fact by all who bear responsibility because of position or knowledge. Where to begin is a point to be considered by each institution or worker in his own locality, but that each should do his part admits of no discussion.

I would fail in justice to conditions if I did not emphasize again that progress is being made, but I should fail also in justice to those who today endure suffering and hardships, if I did not repeat that we, physicians, are called to action—to do what we can now to remedy whatever is remediable, further to lend intelligent assistance it may be to lead, in the constructive development of this factor of our national life.

STATISTICS OF DISEASE.

THEIR SOURCES, USES, AND LIMITATIONS.

JOHN W. TRASK, M. D.,
Assistant Surgeon General, U. S. Public Health Service.

Read before the Section of Vital Statistics, American Public Health Association, Jacksonville, Fla., November 30–December 4, 1914.

IN considering statistics of disease we have become accustomed to include mortality statistics with morbidity statistics. Morbidity statistics are obtained by the compilation of data relating to cases of disease, and, as disease is present wherever there are cases, morbidity statistics relate to the prevalence and geographic distribution of disease and the conditions under which it occurs.

Mortality statistics are the statistics of deaths. They are obtained by the collection and numerical classification of data relating to the frequency of deaths, their causes and the conditions under which they occur. Most deaths are caused by disease; and, in so far as they are thus caused, mortality statistics relate to those cases of disease which terminate life. To illustrate, in a city in which there had been 500 cases of typhoid fever, of which 45 had terminated fatally, morbidity statistics would treat of the facts relating to the 500 cases, while mortality statistics would include data relating to the 45 deaths.

MORTALITY STATISTICS.

Of the two classes of statistics relating to disease those of mortality are the older. They were developed first because they serve a number of essential purposes and are a necessary part of the bookkeeping of every well-organized community. Among other things mortality statistics show the losses in population caused by death and, in the absence of morbidity statistics, serve as an indication of the prevalence of certain diseases. Because of the latter function they have played an important part in the development of present-day public health administration by showing the need for the conservation of life.

LIMITATIONS OF MORTALITY STATISTICS.

In using statistics of any kind it is always necessary to bear in mind their limitations and the degree to which they actually represent the conditions to which they relate. Like other statistics, those of mortality consist of the numerical compilation and classification of certain data. The compiled statistics cannot be more accurate then the original records from which they are derived. Mortality statistics cannot be more accurate than death registration. A compilation of errors or misstatements will not produce a tabulation of facts. Some of the obstacles to satisfactory mortality statistics have been removed. Others are left for the future to deal with. Though more backward than some countries as to mortality

statistics for the nation as a whole, the United States has made signal progress during the last decade, and for much of this the gratitude of all is due to the perseverance, far-sightedness, diplomacy, and singleness of purpose of Dr. Cressy L. Wilbur.

Mortality statistics cannot be more accurate than the data recorded in the individual death certificates. With the exception of the statement of the occupation of the decedent the personal and statistical particulars usually furnished by some member of the family are undoubtedly in most instances accurate. As to showing the exact kind of work, statements of occupation suffer because of the indefiniteness of many of the terms commonly used. This is due in some measure to the fact that the nomenclature of occupation in common use has not progressed apace with the rapid development of new industries and industrial processes and methods. Whereas, 50 years ago the statement of occupation might have been in most instances comparatively simple and easily understood; today, with changed industrial conditions, the matter requires greater precision, if useful statistical information is to be obtained.

From the standpoint of public health administration undoubtedly the most important item in mortality statistics is that relating to the cause of death. Unfortunately, the statistical data relating to this particular are generally among the least dependable. Very probably every community in its development of death registration must pass through an early period when it does not receive the conscientious coöperation of the practising physicians and during which many of the physicians do not attempt to record the actual causes of death. It must then pass through a period when the physicians are becoming gradually educated as to the need for and the proper method of stating the causes of death for the purposes of death registration. After these developmental periods have been passed the death certificates and the derived statistics will show the true causes of death to the extent that the physicians themselves know the true causes. From this time on the statistics of causes of death will depend upon the training and diagnostic acumen of the practising physician. They will depend upon medical education and the development and use of diagnostic methods. In many of the older communities and in those where the practising physicians have received what is at present considered a good medical training, undoubtedly the actual causes of death are given in most cases of the more easily diagnosed conditions. As regards the less readily diagnosed conditions this is without doubt not true.

Comparing Incomparable Data.

So much for the elements which have a tendency to inject numerical inaccuracies into statistics of deaths. The improper use of mortality statistics is a thing of frequent occurrence. Unwarranted conclusions

are being drawn almost daily by those who, while not thoroughly understanding the nature of the statistics, nevertheless, make use of them as a guide for action, or an authority in argument. One of the principal errors made is the comparing of data which is incomparable because dissimilar. The data may be incomparable because the original records were dissimilar, or because of different methods employed in their numerical compilation and classification. Mortality rates arrived at by lax enforcement or faulty methods of registration cannot properly be compared with those based upon complete registration, nor can the rates of communities with populations of different sex and age composition be compared unless proper allowances be made and the rates expressed in terms of the same population. It is improper to compare the mortality rate of an aggregation of young men picked for physical soundness, such as an army or navy, with the crude or general mortality rate of a civilian population. We would come nearest to the possibility of making a comparison by comparing the rate of the picked body of men with the rate among men of the same age groups in the civil population. But this would not be an entirely fair comparison either, for the one group would consist of men especially picked for physical fitness, while the other group would include the fit and the unfit, the strong and the weak. Nor is it possible to compare the mortality rate of any special population group with the rate of the population from which it has been derived by intentional or unintentional processes of selection unless the differences in population composition are analyzed and considered. To illustrate, it would be utter folly to compare the mortality rate of New York City, or the registration area of the United States with that of the Canal Zone without taking into account the differences which may have been produced in the age and sex compositions of the two populations by the selective processes naturally operating in the instance of the Canal Zone. One who attempted to compare these populations without an analysis of the population composition would be almost sure to arrive at quite erroneous conclusions. This is a case where the statistics in themselves might be accurate but would suffer in reputation because of the methods of the user.

Another illustration which may serve to make the point still more clear: Little would be gained by comparing the general mortality rate of one of the older American cities or states with that of a pioneer mining community in which there were relatively few women and children unless the comparisons were based upon analyses of the age and sex composition of the respective populations.

The standardizing of population as to age and sex is necessary for purposes of accurate comparison. This is true, not only in death-rates, but in morbidity-rates and birth-rates as well.

Morbidity Statistics.

Morbidity statistics have not as yet been developed to the same extent as mortality statistics. This is due in part to the difficulty of securing satisfactory records of cases of disease from which useful statistical compilations might be made. While it is comparatively easy to obtain records of deaths by control over the disposal of dead bodies, it is quite different with cases of sickness. Many physicians and some statisticians have for a long time realized the extreme importance of comprehensive morbidity records and statistics to the progress of medicine and to public health administration. It is only with the advent of the present widespread interest in the conservation of the health and life of man that especial attention has been given to the subject.

As a part of the existing and growing interest in social betterment, public health administration—the prevention of disease and the conservation of health—will play an important rôle, and inseparably linked with it will be better records of the occurrence of sickness and morbidity statistics. To social workers within health departments, and without, the future will in all probability owe the giving to statistics of sickness and disease the attention they deserve.

Uses of Morbidity Statistics.

Morbidity statistics are derived mainly from the reports of cases of sickness made by practising physicians. The records thus made are essential for the protection of the health of communities. For the communicable diseases these reports show the occurrence of cases which constitute foci from which the disease may spread to others. In some diseases they make it possible to see that the sick receive proper treatment. In occupational diseases they show the location of conditions that are causing illness or injury. In diseases controlled by sanitary measures they show the relative efficiency of such measures and the need for their modification. And finally, the data of morbidity reports when compiled become morbidity statistics and show the past occurrence of disease, its relative prevalence from year to year, at different seasons, and under varying conditions.

Limitations of Morbidity Statistics.

Morbidity statistics suffer in completeness at the present time mainly because the recording of the data from which they are derived depends upon the coöperation of practising physicians, who at times coöperate grudgingly, if at all. Without doubt, however, the physician will cooperate when public opinion looks with disfavor upon the practitioner who endangers the welfare of the community by his neglect to furnish the records of disease required by law for the protection of life and health.

In Russia, physicians are required to report on all cases of sickness and

disability they attend. In most other countries reports are required of only those diseases which the health authorities attempt to control. For the most part these are limited to the communicable diseases, and it is to these that such morbidity statistics as we have relate.

The inaccuracies in morbidity statistics are due principally to incompleteness, that is, to the failure of physicians to report all cases. This causes the number of cases recorded to be less than those that actually occurred. More cases of disease invariably occur than appear in the records. This is, and will continue to be, for many diseases an inherent limitation. Many diseases vary in severity under different conditions, and some cases are so mild, or so atypical, that their true nature is not recognized. Then, too, many cases do not come to the attention of physicians. Neither statistics of disease nor of the causes of deaths can progress in accuracy beyond the ability of man to recognize individual morbid conditions.

The cases notified, however, are usually correctly diagnosed, for physicians very rarely report cases until they are practically sure of the diagnosis. This is so because the obligation for reporting a case is usually not mandatory until the nature of the disease has been ascertained, or at least suspected, and because when a physician reports a case with an incorrect diagnosis the case remains as an evidence of his mistake.

The common error, therefore, of morbidity statistics is one of numerical incompleteness. In this they resemble birth statistics, the usual defect of which is also one of incompleteness. It will be noted that the nature of the usual error in morbidity statistics is quite different from the usual error in mortality statistics, for in mortality statistics, by exercising control over the disposal of dead bodies, it is not difficult to secure in most communities practically complete registration of deaths. It is, however, exceedingly difficult to secure correct statements of the causes of death. The physician feels compelled to record a diagnosis in each death certificate and he invariably does so even when he is quite uncertain as to the nature of the fatal malady.

The tendency is then in morbidity reports for the diagnosis to be correctly given, but not all cases reported, while in the registration of deaths the tendency is, on the other hand, for the recording of practically all deaths, but the filing of many incorrect statements of the causes of death. It is quite probable, therefore, that our morbidity statistics for those diseases which have been notifiable for some time, and to the notification of which physicians have become in a way accustomed, are at the least relatively as complete and give as true an account of the prevalence of cases of these diseases as the average mortality statistics do of the occurrence of deaths from individual causes.

The following table shows the number of cases of certain diseases reported

in a number of selected cities and states for each death recorded as due to the same disease during the same period:

TABLE SHOWING THE NUMBER OF CASES OF CERTAIN DISEASES REPORTED FOR EACH DEATH REGISTERED AS DUE TO THE SAME CAUSE IN A NUMBER OF SELECTED CITIES AND STATES.

	Cases reported.	Deaths registered.	Number of cases reported for each death registered.
DIPHTHERIA:			
Year 1912.			
District of Columbia	393	15	26
Utah	328	23	14
Year 1913.			
District of Columbia	530	26	20
Birmingham, Ala.	145	3	48
Spokane, Wash.	47	1	47
Minnesota	3,073	209	15
MEASLES:			
Year 1912.			
District of Columbia	1,638	7	234
Utah	3,117	15	208
Year 1913.			
Denver, Colo.	746	3	248
Grand Rapids, Mich.	2,124	9	236
Spokane, Wash.	237	1	237
District of Columbia	5,713	25	228
Montana	2,094	17	123
SCARLET FEVER:			
Year 1912.			
District of Columbia	259	4	65
Utah	1,024	18	57
Maryland (exclusive of Baltimore)	608	13	47
SCARLET FEVER:			
Year 1913.			
Dayton, Ohio	146	1	146
Louisville, Ky.	576	6	96
District of Columbia	556	13	43
Utah	1,020	15	68
Maryland (exclusive of Baltimore)	822	23	36
TUBERCULOSIS:			
Year 1912.			
Maryland (exclusive of Baltimore)	3,262	1,045	3.1
Virginia	4,624	1,435	3.2
Michigan	6,423	2,731	2.3

TABLE SHOWING THE NUMBER OF CASES OF CERTAIN DISEASES REPORTED FOR EACH DEATH REGISTERED AS DUE TO THE SAME CAUSE IN A NUMBER OF SELECTED CITIES AND STATES.—*Continued.*

	Cases reported.	Deaths registered.	Number of cases reported for each death registered.
Year 1913.			
Seattle, Wash.	633	198	3.2
Milwaukee, Wis.	974	340	2.9
Boston, Mass.	3,487	1,260	2.8
Maryland (exclusive of Baltimore)	3,299	1,122	2.9
TYPHOID FEVER:			
Year 1912.			
Virginia	4,330	260	16.6
Utah	549	57	9.6
Maryland (exclusive of Baltimore)	1,795	227	7.9
Year 1913.			
Paterson, N. J.	115	4	28.7
Fall River, Mass.	139	12	11.6
Cincinnati, Ohio	266	24	11.1
Utah	973	90	10.8
Maryland (exclusive of Baltimore)	2,984	306	9.7

THE SANITARY CONTROL OF SHELLFISH INDUSTRIES.

CARLETON BATES,
Bacteriologist, Bureau of Chemistry,
U. S. Department of Agriculture, Washington, D. C.

Read before the Laboratory Section, American Public Health Association, Jacksonville, Fla., November 30-December 4, 1914.

ONE of the most interesting and important problems of the sanitation of food products, now before food officials and those interested in sanitary conditions, is that of the sanitation of the shellfish industries. The oyster, clam and scallop industries are of the greatest importance, and of these the oyster trade is the largest. How to control this industry from a sanitary standpoint and at the same time conserve this valuable food product has been a matter of discussion for some time.

Several procedures have been presented by which this industry may be placed under sanitary control. Two methods are preëminent among all others; by one, seizure is made of the product and criminal proceedings are instituted against the shipper or dealer; by the other, food officials coöperate with the industry in the determination of the polluted areas of oyster grounds and local, state and government officials coöperate with one another and with the industry to prevent the use of oysters from these polluted areas, until such time as examination shows the localities to be free from pollution.

A comparison of these methods at this time may be of interest. It may be said that the method of seizure of the goods and criminal proceedings have to do solely with individual shipments. This procedure serves to prevent some material of a polluted or decomposed nature from reaching the consumer, and holds the dealer or shipper responsible for the shipment, rendering him subject to a fine or imprisonment. In oyster localities, however, there are generally a number of shippers or dealers using material from the same locality. All of the material may be of the same character and subject to the same conditions of sanitation. To regulate or control the industry by the method of seizures and criminal procedure would necessitate the services of a large force of men, both for inspection and analytical work. Without such a force it would be possible to effect the seizure of only a percentage of the shipments and to permit the remaining shipments to reach the consumer. The result, therefore, of seizure and criminal procedure is a control only of individual shipments or dealers. This method, however, has the effect of placing a feeling of uncertainty in the minds of the shippers and serves to make them cautious as to the locality of oyster ground from which the proper material may be shipped.

In controlling the industry by the coöperative method, systematic examinations of the oyster beds and of the water influencing the same are made. As a result of these examinations results are obtained from which definite knowledge is secured whereby it can be shown that within certain localities it is inadvisable to take oysters on account of the amount of sewage or polluting material in that section. Having secured this information, it may be used to prohibit the taking of oysters within these localities until such time as examination shows the product to be in an acceptable condition. By this means, it is possible to control all of the material coming from a given locality, whereas by the other method only a single shipment from the same locality may be seized. By such systematic examinations it is possible to control all of the material originating in the various localities of the country. This method of control has been successfully tried by various state officials and the Federal Government. Of the states controlling the shellfish industry by this means, Rhode Island, New York, New Jersey and Virginia are foremost. Assistance has been given by Federal officials to the states wherever possible.

As an illustration of this method, it may be of interest to note the procedure of the Bureau of Chemistry with regard to sanitary control. When a given locality in which to conduct the investigations has been decided upon, a series of sampling stations is established, located with regard to possible sources of pollution shown by inspection of the locality. Two series of samples are secured, the first, taken generally in the channel of the stream, is for the purpose of studying the effect of dilution or purification on the polluting material. Examinations are conducted from both bacteriological and chemical standpoints. A second series includes samples of oysters and water. The oyster samples are taken at about equal intervals in passing down a stream and at such points as are representative of the locality as far as is possible. At the same time a series of water samples is collected from the water over the various oyster beds. This series helps to show the effect of any polluting material upon the oysters. Bacteriological and chemical examinations are conducted on the water samples and bacteriological examinations on the oysters. At the time of collection of the samples full notes are kept as to the conditions of tide, temperature of the air and water, wind, inspection of the shore, etc. The results are tabulated and reëxaminations are made at regular intervals, generally one month apart.

When an investigation has been conducted in this manner and the results are tabulated, conclusions may be drawn from the information so obtained as to the extent of the pollution, the effect on the oyster grounds, climatic changes, the influence of tides, wind, temperature, etc. At the time these conclusions are reached those interested are informed as to the findings, with especial stress laid on the fact that oysters should not be

used for trade within the time limits in which they show marked pollution. If, however, they are used for trade, then seizures are made and criminal proceedings instituted.

By this method the trade is acquainted with conditions surrounding the oyster-growing localities. In giving this information and laying stress on the fact that oysters should not be used from the polluted areas, without cleansing, a warning is given to the trade. Wherever the warning is not sufficient, legal measures may be adopted. When such conditions are brought to the attention of the courts more severe punishment would be given than in case a warning had not been given.

When polluted areas are found, measures are suggested for the use of the oysters and the conservation of their food value. It is suggested that polluted oysters be floated in non-polluted water of the same salinity as that in which the oysters are grown for a sufficient time to allow the oysters to cleanse themselves, or the transplanting of the oysters to non-polluted areas for the purpose of cleansing. Either method serves the same purpose, that of cleansing the oyster of the pollution.

The results obtained from such systematic examinations may be used from time to time in securing means of removing or treating the sewage or polluting material. As a result of examinations already conducted by this method, sources of pollution have been brought to the attention of the proper officials. Wherever attempts have been made to install sewage-disposal plants or to bring about other legislation aiming to prevent stream pollution, the results of such systematic examinations are of great value.

This season has shown the results of a coöperative procedure as outlined in that the direct sale of oysters from one of the worst polluted areas of the country has been practically discontinued as far as the Bureau of Chemistry has jurisdiction. The success of this method is not limited to a single section but is observable in several localities where the procedure was followed. In this way the sale of oysters from questionable localities has been controlled satisfactorily.

Such control, if general, would protect the public from any possibility of danger from the use of shellfish from polluted areas and do so in a manner which would gain the confidence not only of the public but the dealers and producers as well. For the successful carrying out of the method, cooperation must be instituted between local, state and government officials and with the trade. If this method of control is followed the aims of officials will be fulfilled and the oyster food conserved for the public.

LABORATORY METHODS IN THE DIAGNOSIS OF TYPHUS FEVER.

JOHN F. ANDERSON, M. D.,
Director Hygienic Laboratory, United States Public Health Service, Washington, D. C.

Read before the Laboratory Section, American Public Health Association, Jacksonville, Fla., November 30-December 4, 1914.

NOT until 1912, when Anderson and Goldberger,* showed that so-called Brill's disease was identical with typhus fever, was it recognized that the disease was of possible significance in our morbidity reports. Since the publication of their first paper reports have appeared from widely separated sections of the United States showing that typhus fever is practically endemic in certain of our larger cities and frequently occurs in smaller cities and towns, and even in rural communities.

This has not been because of the sudden development and spread of the disease, but because physicians have had their attention called to the disease and have therefore been on the watch for cases with the clinical features of typhus, cases which previously they were inclined to regard as "atypical" forms of typhoid fever or other diseases.

With this increase in the number of reported cases has come a demand from the clinicians for aid from the laboratory worker in diagnosis. This aid from the laboratory has been, up to the present, largely of a negative character and we are still dependent to a large extent in our diagnosis of typhus fever upon the clinical features of the disease. Nevertheless, certain laboratory procedures may be employed which are of material assistance in the diagnosis of typhus fever.

These procedures may be divided into those which are of value (a) because of the negative findings and (b) because of the positive findings that may be obtained. We may now consider these in detail:

(a) Of special value are a positive Widal reaction, positive blood or feces cultures showing the presence of organisms of the typhoid group, or positive cultural and microscopic findings from the fluid obtained by spinal puncture. Should any of the above findings be obtained, typhus fever may be excluded and for that reason such studies should be made when it is not possible to carry out the procedures to be discussed under (b).

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* Anderson, John F., and Goldberger, Joseph: The Relation of So-called Brill's Disease to Typhus Fever. An Experimental Demonstration of their Identity. Public Health Reports, 1912, 27, 149 (Reprint No. 74).

(b) The laboratory methods that may be employed, positive findings in any one of which justify the making of a diagnosis of typhus fever, are the inoculation of guinea pigs or monkeys with blood and blood cultures, using the special technique as suggested by Plotz.* Elsewhere† I have suggested the inoculation of guinea pigs with blood from cases of suspected typhus fever as of special value in the diagnosis of the disease. It is sufficient to inoculate intraperitoneally, a pair of guinea pigs weighing about 500 grams with 3 to 4 cubic centimeters of either whole, or defibrinated blood drawn during the febrile period. The rectal temperature of the animals should be taken twice daily and the temperature plotted on a chart. It is important that regularity be observed in taking the temperature, so that it is taken at the same time hours each day. Observations should be continued for at least three weeks.

As I have discussed in another paper ‡ the reaction of the guinea pig to typhus, it is necessary to mention here only one or two points. The sole indication of a reaction by the guinea pig to the virus of typhus is manifested by a temperature curve which, in its rise, duration and fall, presents certain features that have come to be considered as characteristic. Unfortunately, as has been shown elsewhere,‡ all guinea pigs inoculated with blood from cases of typhus fever do not react to the virus, and therefore a negative reaction does not necessarily exclude typhus.

On account of their cost, the use of monkeys is more limited than is that of guinea pigs; but, when they are available, the procedure is practically the same as with the guinea pigs.

Plotz* has reported the cultivation of an organism, using special methods of anaërobic culture, from cases of so-called Brill's disease and of European typhus fever. An identical organism was obtained from both. Should his observations be confirmed, we will then have at our disposal a laboratory method of diagnosis of value equal to that of blood cultures in typhoid fever.

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* Plotz, Harry: The Etiology of Typhus Fever (and of Brill's Disease). Preliminary communication. J. A. M. A., 1914, 62: 1556.

† Anderson, John F.: The Problem of Typhus in the United States. J. A. M. A., 1913, 60: 1845.

‡ Anderson, John F.: The Reaction of the Guinea Pig to the Virus of Typhus Fever. Jour. Med. Research, 1914, 30: 467.

REPORT OF COMMITTEE ON COLD STORAGE, AMERICAN PUBLIC HEALTH ASSOCIATION.

Read before the General Sessions, American Public Health Association, Jacksonville, Fla., November 30–December 4, 1914.

YOUR Committee begs to state that since its last report very definite progress has been made in legislation for the regulation of cold storages and cold storage products.

1. The National Commission of Uniform Laws have agreed upon the bill which is to be brought before the Committee of Congress this year (as well as probably before different legislatures), while the federal government of Canada has passed "An Act to Regulate Cold Storage Warehouses."

2. While this Association will be gratified to know that such legislation is to some extent the outcome of the efforts of its Committee, yet it will see by reference to the clauses of these bills that the whole meaning of cold storage from the public health standpoint has not yet been grasped by the framers of these bills. Thus in neither act is fruit, or indeed any vegetable food, included among foods liable to inspection in cold storage. "Articles of food" in the American bill includes "Fresh meat and meat products, fresh food fish, game, poultry, eggs and butter," while the Canada act includes meats (except meat in process of manufacture) or fish, poultry, eggs and butter. The Canadian act includes, however, the valuable provision "and such other foods as may be designated by order in Council," which of course can be made to include fruits, etc.

3. Both acts are defective and crude in their attempts to define cold storage. The American bill says: "Cold storage shall mean the storage of articles of food at or below a temperature of 45° F. in a cold storage warehouse"; while the Canada act says: "Cold storage means the storage of articles of food at or below a temperature of 40° F. in a cold storage warehouse."

Your Committee submits that a clause ought to be added to such definition as the following: "The term 'cold storage' shall apply to any cold-producing process which keeps any designated article of food at such temperature as will maintain it in the highest state of wholesomeness."

4. The subsequent provisions of the American bill are comprehensive and are intended to prevent evils which, through the lack of knowledge and in the absence of inspection, have grown up alongside the development of the cold storage business. The Canada act, without giving specific details, provides that "Orders in Council may be passed to deal with the several matters specifically treated in the bill." Each method has its

advantages and illustrates different methods of legislation. Each provides for:

(a) Licensing cold storages.

(b) The inspection of cold storages, the former providing for revocation of license if insanitary conditions are not corrected.

(c) For keeping records of the date of placing in storage, period of storage, and date of removal.

(d) For appointing inspectors.

(e) For ensuring that all food is wholesome at the time of placing in storage; but the Canada act is defective in stating that the act applies only to foods in storage longer than 21 days, which is akin to the proviso in the American bill which permits articles if cold stored for less than 30 days to be sold without the cold storage label.

(f) Marking all packages plainly.

(g) Fixing length of period of storage for different foods and the extension of periods, after inspection by government officers.

(h) To prevent re-storage of articles once removed from cold storage if once exposed for sale.

(i) Making regulations for carrying out the work is common to both acts.

(j) Both acts have provision for fines and imprisonment.

5. Now that so much is known with regard to the best methods of handling the various foods in cold storage it would seem that such clause as (g) could with advantage be replaced by something such as this: "That the period of time during which any article of food can be legally kept in cold storage will be determined by its keeping qualities, its actual condition at any time of inspection and the seasonal scarcity of the article as set forth in regulations under this act."

With experts increasing constantly in knowledge, experience and numbers, it ought not to be difficult to have a commission selected from state, federal and municipal officers, professional chemists and bacteriologists, and from persons engaged in the business to report on these most important points; while this Association might very properly by resolution direct the attention of the federal governments of the different countries and those of states and provinces to the need for the standardization of periods of storage for each individual article of food, based upon experiments.

(a) As to changes in normal tissues with different lengths of time of storage.

(b) Formation of decomposition products in tissues injurious to health.

(c) The optimum temperatures at which the various articles are preserved longest without deleterious changes.

(d) The relative humidity at which each food maintains best its normal

condition with minimum development of fungi, moulds or bacteria and with least loss of weight.

6. Inasmuch as the development of the ideal in cold storage methods means directly the conservation of the largest proportion of stored products, both as regards quality and quantity, and therefore has a direct relation to their marketable value, it is apparent that, with the ever increasing quantities of food products being placed in cold storage, no subject has a more direct relation to health, since it means both the saving of large quantities of foods, otherwise destroyed, in their most wholesome condition and the lessening of prices in those periods of ordinary scarcity when certain foods are produced in smallest amounts.

Respectfully submitted,

DR. WARD L. BEEBE,
DR. PETER H. BRYCE,
DR. W. F. SNOW,
F. D. BELL, *Chairman.*
Committee on Cold Storage.

REPORT OF THE COMMITTEE ON STANDARD METHODS FOR THE BACTERIAL DIAGNOSIS OF GLANDERS.

Read before the Laboratory Section, American Public Health Association, Jacksonville, Fla., November 30–December 4, 1914.

YOUR Committee is pleased to be able to record a considerable advance in knowledge regarding the diagnosis of glanders since its report of 1911. In that report, presented by Dr. W. L. Beebe as chairman, the following conclusions were reached:

1. That mallein is the most reliable practical method that we have of diagnosing glanders.

2. That the agglutination test is a very valuable aid in diagnosing glanders, and, in some cases, can be employed where conditions prevent the application of other tests.

3. Straus' method is reliable in clinical cases where a positive reaction is obtained in the guinea pig and *Bact. mallei* recovered in pure cultures from the lesions.

4. It is advisable to make cultures in suitable culture media, such as glycerine potato, from the suspected material when Straus' method is employed.

5. Complement fixation is very reliable, but is probably too tedious and complicated for routine procedure.

6. Cuti-reaction and ophthalmo reactions with mallein have shown very poor results.

At the present time we possess several methods by which we are reasonably sure of diagnosing practically all cases of glanders. In the light of recent study and experience, however, the ophthalmic mallein test is now regarded as the most reliable and practicable for ordinary use, being more accurate and convenient than the subcutaneous mallein test which has been the most widely used for many years; while the combined agglutination and complement-fixation test is the most highly accurate method, though this, of course, is limited to laboratory use.

Various Methods for Diagnosing Glanders.

In judging a method which would be the most satisfactory for the diagnosis of glanders various things have to be taken into consideration, but especially the reliability of the test. It should be convenient, the results should be manifested as early as possible, the reaction should be distinct and well-marked, and, probably the most important of all, it should be possible for the practitioner to apply the test. The last condition must be seriously considered, since his standing in the community and the confidence of the public in his work would be more manifest if in suspected cases he could personally decide on the diagnosis instead of having to depend entirely on the results of serum tests made at some distant laboratory.

It would require a great amount of space to enter into the history of the various methods of diagnosis and to enumerate the data we possess on the different tests. The advantages and disadvantages of the various methods, especially of the subcutaneous mallein tests, have been repeatedly published and are accessible to all those who are interested in the subject. There is no question that the subcutaneous mallein test is one of the valuable diagnostic agents for glanders, but no one can any longer deny that failures from this test are more numerous than are desirable. As a matter of fact, the uncertainty of the results from this test caused numerous investigators to seek some other method which might replace the subcutaneous mallein test. Besides the failure resulting in this test, the technic of executing the test, together with the time required for its determination, make it unpopular with many veterinarians and sanitary officers.

Of the other tests which from time to time have been devised for the diagnosis of glanders, the precipitation, the opsonic, and the conglutination tests will not be considered, since the results from these tests are not encouraging.

For laboratory tests the combined agglutination and complement-fixation test will no doubt remain the most satisfactory, and should always be applied in cases where doubt arises as to the results of other tests carried out by the practicing veterinarian. These latter should be considered as accessory tests, and provision should be made everywhere so that in case of doubt the serum could be subjected to the laboratory test mentioned, and the final decision should rest on its outcome.

The Ophthalmic Mallein Test.

During the last few years the ophthalmic mallein test has gained great favor in the diagnosis of glanders. The popularity of the test is rapidly gaining wherever it has been applied, and among its supporters we find at the present time the greatest authorities on the subject of glanders and on clinical diagnosis. This method of testing is at present officially recognized in Austria, and the indications are that ere long it will constitute the official test in other countries. The results obtained in Austria, where the test has been employed for several years, are very gratifying, and Professor Schnurer, of that country, one of our greatest authorities on glanders, claims that the control of the disease can be very satisfactorily carried out by the application of the eye test, supplemented in doubtful cases by the agglutination test. Bavaria has recently adopted this method of diagnosis for official testing. In Germany the method is also gaining in favor, and current veterinary literature contains expressions of satisfaction with this test from many German authorities. In the United States, the Bureau of Animal Industry, in consideration of the favorable results obtained, has recognized this method of diagnosis for interstate shipments of

equines. The test has also been officially recognized by the Canadian authorities, and thus far no sanitary official connected with any of the states in this country has declined to approve this test.

The favorable results which have been obtained with this diagnostic method can no longer be denied. Its practicability is apparent, and its use in the control of glanders appears to be now an absolute necessity.

Simplicity of Procedure.

The ophthalmic test has a great advantage over others because of its very simple application. It may be readily executed by any veterinarian, and its other advantages are that the results are obtained in a comparatively short time and are, as a rule, distinct and definite. The simplicity of its application is plainly manifest when compared to the subcutaneous test, as it is only necessary to drop two to three drops of concentrated mallein into one of the eyes of the animal to be tested, or, by a still simpler procedure, to dip a camel's-hair brush into mallein and introduce this into the conjunctival sac of the animal. The reaction usually commences in 5 to 6 hours after the introduction of the mallein and lasts from 24 to 36 hours. A positive reaction is manifested by a purulent secretion from the tested eye. This may be very profuse or slight, sometimes associated with a severe conjunctivitis and edema of the lids, and at other times without any inflammatory symptoms being present. At times only a very small quantity of pus may be present in the inner canthus of the eye. At other times the reaction may manifest a true pyorrhea.

The reaction manifests itself in varying degrees in the animals, but the intensity of the reaction has no relation to the extent of the disease in the reactor.

Best Results with Raw Mallein.

The essential factor in obtaining satisfactory results from the test appears to be in the use of the right kind of mallein. It must be by all means a concentrated mallein, and apparently the best results follow the use of raw mallein, which, as a rule, represents the mallein obtained after the concentration of the filtrate from the bouillon cultures of the glanders bacilli. The ordinary mallein used for subcutaneous testing is not adaptable, and the failures which have been reported in the literature were without doubt, in the majority of cases, due to the fact that the mallein employed was not sufficiently concentrated. Marioth * correctly asserts that the reaction does not depend as much on the quality and quantity of the mallein as on its concentration. The experiments of the Chairman of this Committee, assisted by Dr. Adolph Eichhorn, in the Pathological Division of the Bureau of Animal Industry, in preserving such mallein with the ordinary quantity of 0.5 per cent. carbolic acid showed that it does not interfere with

* Monatsh. f. prakt. Uerheilk., bd. 24, hft. 7/8, p. 340-373; hft. 9/10, p. 426-546. Stuttgart, 1913.

the results of the test, although the lacrimation which follows immediately after the introduction of such mallein is more profuse than when carbolic acid has not been added, but this disappears within one or two hours after the application of the test.

Preparation of the Mallein.

The concentrated mallein which has been used in the work of Mohler and Eichhorn and which gave such satisfactory results was prepared at their request by and in coöperation with Mr. A. M. West, of the Biochemic Division of the Bureau of Animal Industry, as follows:

The media consists of bouillon containing 5 per cent. glycerine, 1 per cent. peptone, and 5 per cent. NaCl. The reaction is that of the natural acidity of the meat, no acid or alkali being added. The flasks of media are inoculated with virulent cultures of *Bacillus mallei* and placed in the incubator at 37.5° C. for a period of two months or more. The stock cultures of *B. mallei* are kept on agar, and their virulence is renewed when necessary by passage through a series of guinea pigs.

The well-grown cultures show a heavy mass of organisms, which generally sink to the bottom of the flask. This growth is of a whitish color splotched with brown. The cultures are then removed from the incubator and heated for one hour in the Arnold sterilizer. Then they are stored for two weeks in a dark closet to settle. The clear liquid is then carefully decanted and the growth proper is discarded.

A measured amount of the decanted liquid is concentrated over a steam bath to one-third its volume. It is then filled into flasks and sterilized and again filtered while hot, first through one then through three paper filters. Next the clear liquid is passed through a Berkefeld filter. This is followed by a concentration to one-tenth its original volume and sterilization.

To the raw mallein, concentrated to one-tenth its original volume, is added 0.5 per cent. carbolic acid and 20 per cent. glycerine. Then the liquid is again concentrated to one-tenth its original volume, filtered while hot through filter paper, and sterilized. It is kept in a dark place for a week, and, if upon inspection a precipitate is found, the mallein is again passed through paper filters and sterilized. The finished product is a clear, sirupy, dark-brown liquid, with a disagreeable odor. The mallein is then bottled, under aseptic conditions, in small vials and is ready for use.

It is advisable to provide the mallein for the tests in small vials, each containing about 1.5 cc. of mallein, which is sufficient for testing 15 horses. After the vial has been opened and part of the contents used for testing, especially if the mallein has been taken out with a camel's-hair brush, the remainder should not be used for tests applied on subsequent days, but should be discarded.

Method of Applying the Test.

Before the application of the ophthalmic test the animals should be carefully examined to ascertain whether the eye shows conjunctivitis or other changes which are associated with suppuration. Should such be present the test should not be applied.

The test consists in introducing into the conjunctival sac of the eye several drops of either undiluted raw mallein or a solution of precipitated mallein (0.1 to 0.2 cc. per horse). This may be introduced either with the aid of a camel's-hair brush or with an eye-dropper. Only one eye is treated; the other serves as a control for comparison of the reaction.

The results of the test should be recorded as follows:

N = Negative.—Eye unchanged.

S = Suspicious.—Seromucous discharge.

P+ = Positive.—Seromucous discharge with purulent flakes.

P++ = Positive.—Distinct purulent discharge.

P+++ = Positive.—Purulent discharge with swelling of the eyelids.

P++++ = Positive.—Strong purulent discharge with swelling and gluing together of both lids.

The application of the ophthalmic test should not be repeated more than three times on the same animal within three months, as experiments show that the reaction after the third application within this short period usually loses its intensity in positive cases, and on subsequent tests may be entirely absent. In cases where the results of the second test immediately following the first test are atypical, the blood of such animal may be drawn and forwarded to a laboratory for the serum diagnosis. From experience gained with the eye test such a procedure would become necessary only in a comparatively few cases. In the control of glanders, animals may be retested every six months with satisfactory results.

Conclusions.

In the present state of knowledge of the subject, the Committee concludes:

1. That the ophthalmic mallein test is the most reliable and practicable for ordinary use. It is more accurate than the subcutaneous mallein test, and should be adopted for general use in lieu of the latter.

2. That the combined complement-fixation and agglutination test is the most accurate diagnostic method available, but can be carried out only in a laboratory properly equipped for the purpose. It should be used in cases where results of the ophthalmic test are doubtful or obscure and the final decision should rest on its outcome.

J. R. Mohler, *Chairman.*
W. L. Beebe,
V. A. Moore,
L. Van Es,
B. L. Arms.

Book Reviews.

Graphic Methods for Presenting Facts. *By Willard C. Brinton. New York, 1914. The Engineering Magazine Co. Price $4. Cloth,—380 pages, 7 x 10 inches. 257 charts and other illustrations.*

Those who are interested in public health know that important and essential as is the study of conditions by experts, a campaign for a cleaner city or a lower death-rate will fail unless the results of this expert study are extended down to the crowd, and the public itself understands the facts and coöperates in effecting the remedy. After the data have been collected there arises a question, which expressed in a popular phrase is: "What are you going to do with them?"

The answer is found in an attractive and useful book of recent date. "Use graphic methods," says the author, or to quote him at length, "If it were generally realized how much depends upon the method of presenting facts, as compared with facts themselves, there would be an increase in the use of the graphic method of presentation. Unlimited number of reports, magazines, and newspapers are giving us reams of quantitative facts. If the facts were put in graphic form, not only would there be a great saving in the time of the reader but there would be infinite gain to society, because more facts could be absorbed and with less danger of misinterpretation."

The reader will find in this book a splendid collection of the best forms of charts and diagrams and other kinds of graphic presentation, covering a wider range of subjects. What makes the collection especially valuable is that it is composed of reproductions of actual charts, just as if the reader had gone to innumerable exhibits or had searched through many illustrated reports and found the examples best suited for the presentation of his own data. The book, therefore, is of interest to educators, social workers, engineers, statisticians, health officers and others. The comparative scarcity of charts dealing with health, vital statistics and kindred subjects emphasizes the need of graphic methods in these fields.

The book contains not only examples of current forms of charts and diagrams but also practical suggestions for the handling of materials, such as, for example, the kind of pins to use in making pin maps. The author has rendered a service both to the beginner by his careful collection and classification of the data, as well as to the professional by his constructive criticism of graphic methods already found in use. The *Survey* describes this book as "the only book of the kind ever printed."

Arthur R. Burnet.

Legal Principles of Public Health Administration. *By Henry Bixby Hemenway, A. M., M.D., formerly Vice-President, Michigan Medical Society, and American Academy of Medicine; formerly Acting Professor of Preventive Medicine, Chicago College of Physicians and Surgeons. 859 pages including index. Law buckram $7.50 net. T. H. Flood & Co., Publishers, Chicago, 1914.*

Hemenway on Public Health, at once a law book and a treatise on preventive medicine, is a book which goes farther than any work that has yet appeared toward filling a want long felt by a large and increasing number of professional men. The growing interest in public health work and the extensive development it has undergone in the last few years have raised a host of legal problems many of which are exceedingly intricate. City and district attorneys and other officials charged with the enforcement of various provisions of law relating to public health cannot fail to find this book helpful.

The text is written in an extremely lucid and readable style and the footnotes constitute a valuable collection of authorities. A legal treatise must of course cite cases as authority for the propositions of law stated by the author in his text; it is a pleasant surprise to find a doctor who has so well mastered this difficult technicality of law-book making.

The first chapter discusses in general terms the nature of public health work and refers briefly to some of the discoveries in medical science which have made it possible to conduct public health campaigns that are something more than guesswork. Among the section headings of this chapter we find such words as "epidemiology, protozoa, phagocytosis, host and carrier." The subjects thus suggested are of course treated in extremely brief encyclopedic style. Next in order are several chapters treating of the nature and functions of the various branches of government and their relation to public health. Doctor Hemenway gives considerable space to the principles of constitutional government and points out the relative authority of various kinds of law—constitutions, statutes and doctrines of the common law. Several chapters are given to the topics most frequently applicable to legal problems involving public health, such as "Police Power," "Due Process of Law," "Nuisances," and the maxim "*Sic utere tuo, ut alienum non ladas.*" Next comes a very long chapter on the law of public officers, their powers, duties and liabilities and their appointment and compensation. The last part of the book, which deals with the principles and authorities applicable to special cases, is distinctly the best.

The discussion of constitutional principles is naturally very elementary from the viewpoint of the lawyer. On the other hand, those portions of the text which fall more properly within the field of medical literature will seem to the physician or biologist to be simple statements of the rudiments of the subjects which they treat.

The index, rather meager for a legal text, is very well supplemented by the table of contents, which is complete. In it are shown all the section headings which for the most part furnish an adequate clue to the content of the section. Following the foreword is a collection of the legal authorities cited. This, together with the table of cases immediately preceding the index, will commend itself to lawyers using the book.

Although Doctor Hemenway's book is not a great law book, it is the best thing in its own field and it is well suited to the purpose of educating public health administrators, as well as members of both the legal and medical professions in regard to the points of contact between public health as a purely scientific thing and the other considerations involved in its administration. It is worthy of the indorsement given it by no less distinguished a member of the legal profession than Dean John Henry Wigmore of the Law School of Northwestern University in the foreword which bears his name.

L. W. Feezer.

The Principles of Hygiene. *A Practical Manual for Students, Physicians, and Health-Officers. By D. H. Bergey, A. M., M. D., First Assistant, Laboratoy of Hygiene, and Assistant Professor of Bacteriology, University of Pennsylvania. Illustrated. Fifth Edition. Thoroughly Revised. 4°. 531 pages. W. B. Saunders Company, Philadelphia, 1914.*

The reviewer notes that this work has passed through five editions and in addition several reprintings since it was first published in 1901. Its aim is to meet the needs of students of medicine in the acquirement of a knowledge of those principles on which modern hygienic practices are based; to aid students in architecture in comprehending the sanitary requirements in ventilation, in heating, in water supply, and in sewage disposal; and to aid physicians and health officers in familiarizing themselves with the advances made in hygienic practices in recent years. This, of course, represents a large undertaking, and, in justice to the author, it is fair to say that the work has been fairly well accomplished. Throughout the book, however, there are evidences that the work has not been kept up to date. This is especially true of the statistics which, in most instances, relate to a period more than twenty years ago. The result of this is seen, for example, in tables such as are shown on page 21 and on page 23, where the reader receives the impression that death-rates in this country range between 17 and 18.

In discussing bacteria in expired air, the writer gives the impression that only in those ill with diseases of the respiratory tract is there danger of the dissemination of the specific disease-producing bacteria. This, of course, entirely overlooks the fact that normal carriers are very common in just this class of micro-organisms.

The diagrams illustrating the distribution of air by various systems of ventilation are the familiar ones which experience has shown indicate the hopes of the ventilation engineer rather than the result actually obtained.

On page 113, the author describes the water supply of New York City and mentions that the amount of water available in the Croton watershed is barely sufficient for present purposes, and that preparation must be made for an extension without delay. No mention is made of the fact that the development of the Catskill watershed at an expense of $160,000,000 is almost completed and that the supply will be available within a year or so.

In chapter V, a number of types of water closets are shown and the statement is made that the hopper closet is one of the principal types now in use. Although the chemical treatment of sewage is discussed, there is no mention of the chemical disinfection of sewage effluence.

The potential energy of food is described and a calorie is defined. The definition, however, refers to the small calorie and it is the small calorie which is used in most of the tables which follow. At the same time, without any explanation of the difference between small and large calories, a table is given on pages 186, 187 and 188, in which the large calorie is used.

On page 209, it is stated that New York City proposes to require tuberculin tests of all cows whose milk is sent to the city. This, of course, is an error. The requirement relates only to certified milk. No mention is made of septic sore throat as one of the diseases spread by milk.

On page 212, the new milk law of Philadelphia is described and the recommendation is noted that the milk should reach the city at a temperature not exceeding 50 degrees Fahrenheit. "This regulation, if enforced, will prevent the enormous multiplication of bacteria in milk in transportation to the city." It would have been more instructive to have cited the experience of cities like New York, which have enforced such a regulation for the last ten years with great success.

On page 284, although vitamines are discussed, the term "vitamines" is not mentioned. The reviewer fails to find lead poisoning, phosphorus poisoning, caisson disease, anthrax and glanders among the list of industrial diseases.

The statistics concerning school medical inspection, given on page 288, are fifteen years old. It is not unreasonable to believe that they are not representative of present conditions.

No mention is made of incinerators in connection with the disposal of excreta in armies.

The author states that the curative value of antimeningitis serum is still under investigation. He makes no mention of its intraspinal use.

Statistics concerning the value of small pox vaccination, as given in a table on page 370, relate to Austria-Hungary, Italy and France from 1883 to 1896.

Calmette's tuberculin reaction for the eye is incorrectly described as performed with a 1 per cent. solution of tuberculin. As a matter of fact, it is a solution of an alcoholic precipitate of tuberculin.

The Wassermann reaction is dismissed with ten lines and nothing is stated regarding its very great value. On the other hand, seven lines are devoted to the precipitation reaction of Michælis, although this has everywhere been abandoned.

The quarantine laws of the United States are given apparently in full and occupy more than fifty pages. The first of these is dated 1902 and includes the act which changes the name of the United States Marine Hospital Service to the Public Health and Marine Hospital Service of the United States. The reviewer is strongly of the impression that this act has been superseded and that the title of the service now is the United States Health Service.

The reviewer has noted the defects in some detail not with a view of adversely criticising the book but rather to enable the author, in a subsequent edition, to enhance the value of the work. It is difficult to compress the vast fund of information in this field into five hundred pages and taking it, all in all, the present work gives a satisfactory survey of this important field.

C. F. Bolduan.

The Tuberculosis Nurse, Her Functions and Her Qualifications. *By Ellen N. LaMotte, R. N., Graduate of Johns Hopkins Hospital, former Nurse-in-Chief of the Tuberculosis Division of the Baltimore Health Department. 292 pages. $1.50. J. P. Putnams' Sons, New York and London.*

Eight years' experience in tuberculosis work in Baltimore, first as a field nurse of the Visiting Nurses' Association, later as organizer and director of the Tuberculosis Division of the Baltimore Health Department, have convinced Miss Ellen LaMotte that the crux of the tuberculosis problem lies in the segregation of the advanced case and that the function of the tuberculosis nurse is to teach patients and their families the necessity for such segregation. "Her one great duty—the paramount reason for her existence—is to induce the infectious patient to go from his home into an institution." Physicians tell us that the careful consumptive is not a menace. Miss LaMotte says that a careful *enough* consumptive doesn't exist and quotes figures to prove that even after prolonged home supervision by nurses practically only one half of the patients supervised can be considered as even *fairly* careful.

As segregation on any wholesale plan is still far from practicable, the nurse's first care is the family; her second, the patient himself; but it is by working through the latter that the former may be reached.

The standard set for the nurse's qualifications, both personal and technical, is high. Tuberculosis associations generally will do well to follow the advice given regarding the selection of workers. Questions of the nurse's salary, of the daily routine of work, of the necessity for safeguarding her own health, the relation between nurse and general practitioner, coöperation with organized social and relief agencies are discussed with a frank recognition of inherent difficulties such as could only result from a first-hand knowledge of the problems the tuberculosis nurse is constantly facing.

Some physicians will resent the author's strictures on certain members of their profession. Many nurses will disagree with her dictum regarding relief-giving. Social workers will rejoice at this testimony from a medical worker.

The technique of tuberculin tests is described and the methods of fumigation which obtain in Baltimore are noted at length. The value of these procedures as well as the mooted question of sanatorium care is being widely discussed by experts in various cities throughout the country. The final decision must rest with the medical profession.

One could wish that the few figures quoted had been more carefully related; that the social value of records and reports had been dwelt on at greater length; that more emphasis had been placed on constructive work with the non-infectious child to prevent his developing a few years later into the infectious adult.

Not the least interesting feature of the book is an illuminating introduction by Dr. Louis Hamman, Physician-in-Charge of the Phipps Tuberculosis Dispensary, Johns Hopkins Hospital, in the course of which he pays tribute to Miss LaMotte's honesty and enthusiasm. In closing, he says: "The book will be interesting and helpful and, what is more important, stimulating to all engaged in tuberculosis work. All the better if some parts of it cause surprise and opposition—we will then review more critically our own attitude."

F. Elisabeth Crowell.

Health Department Reports and Notes.

REPORTS.

Dover, New Hampshire.

The executive officer of the board of health of Dover submits his annual report for the year 1915. Dover is a city of about 13,000 population, situated on a tidal estuary near New Hampshire's coast.

During the year the board expended eight thousand dollars or about sixty-two cents per capita population. On first sight this is a creditable showing but investigation reveals the fact that by far the greater part of this went for garbage disposal, street cleaning, and so forth. These activities manifestly need money and attention but Dover should not deceive itself with the idea that the $6,793.73 which it spends for garbage collection and disposal, street cleaning and sewer work is spent for the public health merely because the board of health is in charge of the expenditure. The effect of this work upon health is only indirect and if it were done by a different board, as it should be, the people would realize that they are spending less than ten cents per capita on health work and are getting very little for their money.

The executive officer receives only $900 per year and if we disregard garbage, sewers and street cleaning we find that he reports little more than the following:

1. Milk. Inspections (number not stated) have been made of barns, utensils and vehicles and "such recommendations made as seemed necessary." The state board of health has now passed rules which are said to remove from the local board of health the responsibility for enforcing regulations for the protection of the milk supply.

2. Water. "The reports of the state chemist clearly show that the water supply is of excellent quality."

3. Inspections. The report indicates that sanitary inspection has been regularly carried on and a list of inspections is given. The yards and streets are clean and privies are being abated.

4. Contagious diseases. The table of cases during the year certainly makes a favorable showing, but the fact that in a city of 13,000 only two cases of whooping cough and three cases of measles are reported in a year indicates that the reports are incomplete.

5. Schools. The basements were inspected monthly. Various rooms have been fumigated during the year as a precautionary measure. Children were occasionally sent home by the city physician on account of contagious disease.

6. Vital statistics. An archaic alphabetical list of causes of death (including old age, senility, gangrene, blood poison, marasmus and other undesirable terms shows the total deaths. The death-rate, corrected for non-residents, was 19 per thousand.

The report gives no intimation of any actual work done by the board of health on medical inspection of schools, investigation and suppression of infant mortality, bacteriological control of the milk supply or any of the other lines of work considered as a part of the duties of an up-to-date health department. The health officer calls attention to the fact that very little ($540.24) aside from his salary is being spent on matters pertaining strictly to the public health.

To judge from the report we might conclude that as a matter of fact its health work is being done by the garbage department, a plan which is now out-of-date.

Fort William, Ontario.

Fort William, a city of 27,000, on the shore of Lake Superior appears to be another one of the Canadian cities which is falling into line in the forward movement for progressive health work. The expenditure for health work, including the isolation hospital, is only thirty-four cents per

capita. Improvements are being made and it is possible that as the people realize the facts they will coöperate more generally.

The chief advance in 1914 was the appointment of a whole-time health officer to direct the work. He has inaugurated a department of vital statistics and is thus able to direct his efforts more surely to the lines of activity which need attention. He has succeeded in greatly reducing the number of deaths from diarrheal diseases in infants by means of visiting nurses who have followed up the reports of births and given instruction to the mothers. The employment of an assistant in the division of sanitary inspection has enabled the chief sanitary inspector to devote his entire time to food and dairy inspection. Regular inspection of dairies and instruction of the farmers is causing an improvement in the milk supply.

The medical inspection of schools is now in the hands of a nurse who spends full-time instead of half-time as in the past. A dental society has been formed in the city and has made a proposition for the dental inspection of school children which the health officer hopes may be put into practice.

The report of vital statistics shows a death-rate of 11.2; a birth-rate of 35 and an infant mortality rate of 116.8. These figures would have added interest if those for the years preceding were also cited. The report is published in a good business-like form and is a credit to the city.

Framingham, Massachusetts.

The annual report of the town of Framingham for 1914 devotes about twenty pages to the report of Mr. R. N. Hoyt, agent and milk inspector of the board of health. Framingham has a population of 14,000 and is one of the towns which coöperate to secure efficient supervision of health work by the Coöperative Boards of Health. This coöperative system was originated and sponsored by the Sanitary Research Laboratory of the Massachusetts Institute of Technology and has previously been described in this magazine. Briefly, its purpose is to enable small cities and towns to secure first-class health organization under the supervision of experts of a grade which they could not afford to employ except by coöperation with each other. The plan has met with such success that the surrounding towns have seen its advantages and ten of them now pay their share toward its support.

The report follows in a general way the standard form recommended by the Massachusetts Association of Boards of Health. It gives not only the definite statistics and facts in regard to the prevalence of disease, the work carried on, and the improvements made; but is also planned to have a distinct educational value. This is accomplished by emphasizing the causes of disease and the methods of prevention; the work of the health authorities; the responsibility of the individual; and the possibilities of still further improvement.

Although the two years in which the coöperative boards have served Framingham is too short a period on which to base conclusions, it may be noted that there has been a very marked decrease in the infant mortality rate, "the barometer of sanitation." The general death-rate has been lowered, the quality of milk sold and the condition of dairies shows marked improvement; and the typhoid and diphtheria situation shows improvement. Scarlet fever and measles show an increase, possibly due to more complete reports of cases of these diseases which are often neglected and partially due to the fact that the cases have in general been so light as to go unrecognized until they had passed the infectious stage.

The report includes special reports on the laboratory, infant mortality, food inspection, control of nuisances, housing, and fly and mosquito extermination.

North Adams, Massachusetts.

The board of health of North Adams presents an excellent report for the year ending November 30, 1914. Not only is the report prepossessing in appearance, but also it indicates a spirit of progress, and comparison with the reports of previous years shows that improvements in methods are continually being introduced.

The city has a population of about 23,000 and

spends thirty-eight cents per capita through the health department, but eleven cents per capita out of this sum goes for garbage collection. The death-rate is under 14 per 1,000.

Contagious diseases have been well-controlled in general but the board complains of the difficulty in suppressing epidemics when parents and physicians carelessly or willfully fail to report the cases. This criminal neglect is naturally reflected in the health of the community. The only serious outbreak, however, was of typhoid fever. Fifty-one cases occurred during August and September and all were traced to a milk peddler who continued his rounds for two weeks while suffering from typhoid. The difficulty of tracing the epidemic to its source was increased by the fact that much of the milk was sold to various dealers in summer drinks. The fact that the city water supply ran low at the same time gave rise to a popular belief that the typhoid was water-borne but there was no foundation for the rumor.

Milk and dairy inspections have been increased and a list of dealers with the score of their dairy is published. The board recommends the passage of an ordinance requiring that milk be sold in bottles only.

Medical inspection of schools is carried on by physicians and is aided by the teachers. The school nurse, formerly employed, has resigned, and apparently her place has not been filled.

The tables of vital statistics should be more complete and might be better arranged. The system of classification of causes of death is better than the common home-made type but should be replaced by the international system.

Infant mortality is not discussed and apparently receives no attention.

North Yakima, Washington.

It is to be regretted that a health department which was in a position to serve as an example to other departments all over the country and which has done so to some extent should be unable to publish a more complete report. Each year the report of the health department appears as a dozen pages in the city report and consists only of a series of "exhibits" which are largely of a tabular nature. We may also note with regret that North Yakima has decided to make a marked reduction in its health expenditures. Considering what the city gained by the investment of money in sanitation, it appears to be a rather short-sighted policy which drops the investment when good results have been obtained and assumes that the good conditions will continue. It is to be hoped that they will continue and as matters stand at present they are likely to, although no great improvements can be expected.

To show how well the health of the city has been maintained despite the cut in appropriation we need only to cite the death-rate for residents of 5.33 and the infant mortality rate of 80 per thousand births.

The exhibits include reports of vital statistics, of milk inspection, food inspection, meat inspection, sanitary inspection and of the bacteriological laboratory and the city nurse. The tables are neatly arranged.

NOTES.

School Medical Inspection in New York City.—Clinton P. McCord, M. D., in the April *Albany Medical Annals*, discusses at some length the machinery for carrying on this work and the routine method for examining the eyes, ears, tonsils, nose, teeth, nutrition and skin. He also considers the work of the health officer in dealing with contagious diseases, physical defects of school children, and physical training.

The purposes of school medical inspection he summarizes as follows:

1. To detect and exclude cases of parasitic and contagious disease, and to prevent epidemics of the same among public school children.

2. To detect physical defects and secure correction of these defects through the coöperation of school officials, school nurse, parent, and family physician or dispensary chief.

3. To pass judgment on the physical fitness of teachers and janitors.

4. To act as expert to the Board of Education

in maintaining sanitary conditions and proper physical equipment in the schools.

5. To teach practical hygiene in school and home through the agency of the school nurse.

6. To diagnose mental deficiency.

7. To make special studies of the relation of the physical child to the various phases of educational activity, and in conjunction with the superintendent of schools to correlate preventive medicine and pedagogy in order to produce a maximum of efficiency in the schools consistent with the preservation of health.

8. To coöperate with all agencies concerned in the social, moral, mental and physical improvement of the child.

For the efficiency of the medical inspector he recommends (1) the reading of a few good books such as "Health and Medical Inspection of School Children," by Dr. Cornell (F. A. Davis and Company); "Medical Inspection of Schools," by Doctors Gulick and Ayers (Survey Associates); "The Hygiene of School Life," by Dr. Ralph Crowley (Methuen and Company, London); "School Health Administration," by Dr. L. W. Rapeer; "The Hygiene of the School Child," by Terman; "Civics and Health," by William H. Allen (Ginn and Company); and "Health in Education," by McKenzie; (2) study of the work done in other cities and the perusal of recent literature, and (3) coöperation.

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"Disinfection of Subway and Elevated Cars.—In the *Bulletin* of the New York City Health Department, a letter is printed from the general manager of the Interborough Rapid Transit Company, announcing that the company has decided to discontinue the use of disinfectants in its cars, relying rather upon frequent airing and thorough mechanical cleansing of the floors and all points of contact."—*The Trained Nurse*, April, 1915.

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The Health of City Children Compared with that of Country Children.—In the annual report of the medical officer of Hertfordshire, England, for 1913, there is a comparative study of the health conditions of these two classes of children based upon the examination of over eighteen thousand children, care being taken to compare only those of like nationality and social condition.

The comparison shows that the rural children are larger, possess fewer defects of clothing and foot-gear, of nutrition and cleanliness of the body, of vision, hearing and speech, of mental condition and of vaccination. The urban children show fewer defects in respect to regularity of attendance, clean heads, teeth, tonsils, adenoids, and cervical glands, ear diseases, heart and circulation, infectious and contagious diseases. The superiority on all these cases is quite marked. The urban children probably owe their superiority in certain matters to the resources of the towns, and the villages may be expected to improve in these directions in the future. The reputation of the countryside for health seems to be maintained.—*Public Health*, April, 1915.

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New York's Child Welfare Campaign, 1914.—The work of the division of child hygiene of the New York State Department of Health was recently outlined by the director of the department, H. L. K. Shaw, M. D., in the *New York State Journal of Medicine*.

The Department was established in January, 1914. While the infant death-rate in New York City during the ten years preceding this date had been reduced from 162 to 96 per 1,000 living births, that outside New York City had fallen but little. Infant welfare work in the state had been carried on in only 12 localities. A campaign of education by means of popular exhibits, talks and demonstrations was planned and the following program carried out. Forty-five cities were visited and 150 popular health lectures were given, 57 fairs were visited. Later the exhibits were sent to various smaller villages. Seventy-five thousand leaflets and pamphlets were distributed, these being published in Polish and Italian as well as in English. Special instruction was given to mothers in regard to the clothing and diet of babies.

The total expense of the campaign was $14,500. The infant mortality for the state was reduced from 126 to 111, corresponding to a saving of 1,400 infants' lives. In 32 of the 45 visited the infant mortality fell below that of 1913, while of the 12 cities not reached, only four reduced the death-rate.

The fact that there has been a slight increase in the total number of deaths in the state during

the year is evidence that the reduction of infant mortality has been due to this campaign and justifies its continuation and elaboration during the next year.

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School Epidemics.—The following "Health Hint No. 42" sent out by the Division of Publicity and Education of the New York State Department of Health is another good statement of the futility of attempting to stop epidemics by closing the schools.

"When an epidemic of diphtheria, or measles, or whooping cough broke out in a school, the old-time health officer saw only one thing to do—to close the school; but today there are better and much more effective ways.

"When a school is closed in the midst of an epidemic there are almost certain to be a number of the children who have become infected, but have not yet 'come down' with the disease. When the school is closed these children are sent back to their homes where they are under no supervision. They play freely with their friends and with their brothers and sisters. In a few days the disease germs have grown in their nose or throat, so that they have a little sore throat or a slight running at the nose. This is the *most dangerous* stage of the disease when the germs are being discharged in largest numbers and greatest activity. Yet the children feel fairly well. They are up and about playing with other children and freely *spreading the disease*. In particular they are likely to infect their little brothers and sisters who are specially in need of protection, since these diseases are much more serious for infants than for children of school age.

"The modern way of dealing with school epidemics does not involve the closing of the school at all but uses the school as a most valuable aid in *keeping the children under observation*, detecting the early cases of disease so that they may be isolated and kept from doing harm to anyone. Each school should have a school physician to carry out the necessary supervision. In the case of diphtheria, cultures can be taken from the throats of all the children, and all carriers of diphtheria germs at once discovered. In measles and whooping cough outbreaks, the children can be examined by such a school physician, and the ones who are coming down picked out much sooner than they would be recognized at home. Then these dangerous individuals can be so isolated at home that they cannot spread infection to anyone else in the school or out.

"Last fall Sanitary Supervisor Sears of Onondaga County was called to a town where there was an epidemic of diphtheria. In one school of 240 pupils there were 32 children whose throats contained diphtheria bacilli. The Supervisor persuaded the School Board and the local Board of Health to keep the schools open and to obtain a good visiting nurse to inspect all the children daily and to see that those excluded from school were properly isolated. He had to overcome some opposition to the plan but it was finally followed out and, in a very short time, the outbreak was checked."

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Reaching the People.—"The county health commissioner of Union County, Indiana," according to *The Journal of the American Medical Association*, "feels that one of his duties is to teach the people of the county how to keep well. He has accordingly prepared a little seventy-five page pamphlet, made up largely of material published by the various state boards of health. The board of county commissioners made an appropriation to send a complimentary copy to every home in the county. The pamphlet is simply but forcibly written, and contains chapters on the home, contagious diseases and the baby. In the first chapter, the people are told how to keep their homes clean and healthful, how to dispose of their garbage, how to care for their food and how to take care of their bodies. Directions for disinfection and especially directions for various contagious diseases make up the second chapter, while the third and most important contains directions to mothers for the care of themselves and their children. We have been a long time in learning that if the teacher of good health would compete with the patent medicine man, he must meet him on his own ground. Instruction of the people on health topics is a public duty. It should not be left to professional zeal or to philanthropy. The publication and distribution of such pamphlets as the Union County Health Book are directly and solely for the public good and will yield large dividends in the form of better health and prosperity for the people.

If each county in the nation had a health officer as wide awake and a board of commissioners as broadminded as those of Union County, Indiana, the problems of the prevention of disease and the prolongation of life would be immensely simplified."

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On Competitive Basis.—In an effort to secure better and more interested coöperation between local health officers and the Kansas State Department of Health—a letter—from which the following excerpts are quoted was sent last month by the latter organization to every local health officer in Kansas.

STATE OF KANSAS,
STATE BOARD OF HEALTH,
Topeka, April 2, 1915.

To Health Officers:

Morbidity reports are to be mailed each Saturday night. If no reports are received from physicians during week, you are expected to mail us a "No report" card instead. If by the following Wednesday we do not receive either the reports or a "No report" card, you are marked "Delinquent." We are keeping careful check of deliaquencies for this year, and we hope to encourage regularity of reports by apprising health officers of their records at the end of each quarter.

For the past quarter—that is, weeks from January 2 to March 27, inclusive—we should have had 12 weekly reports from you. For each week you missed we deducted 8⅓ per cent. from your score. This list will show you where you stand:

COUNTIES.	%
Bourbon, Brown, Butler, Clark, Clay, Cloud, Graham, Harper, Haskell, Kiowa, Leavenworth, Lincoln, Marion, Miami, Mitchell, Montgomery, Nemaha, Ness, Osage, Ottawa, Riley, Sedgwick, Sherman, Smith, Sumner, Woodson	100
Allen, Barton, Chase, Cherokee, Cheyenne, Comanche, Cowley, Doniphan, Douglas, Elk, Ford, Geary, Gove, Hamilton, Jefferson, Kingman, Lane, Lyon, Neosho, Norton, Rawlins, Wallace, Wilson	91⅔

CITIES.	
Parsons, Coffeyville, Hutchinson, Wichita, Topeka	100
Leavenworth	91⅔
Fort Scott	83⅓
Kansas City	75
Pittsburgh	50
Atchison	8⅓

Fraternally yours,
JOHN J. SIPPY, M. D.,
Epidemiologist.

✱

Who? Me?

FLIES CARRY UNNAMABLE FILTH TO FOOD. I COUNTED.....FLIES IN YOUR PLACE OF BUSINESS.
DATE..... A CUSTOMER.

The Kansas State Board of Health furnishes free cards bearing the above blank and encourages customers throughout the state who object to buying food over which flies have crawled to spend idle waiting moments in the shops of their butchers, bakers and grocers in counting flies. The above protest can be later filled out and mailed. If these arrive in sufficient numbers and from various sources, the Kansas Board thinks they may have desirable effect.

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A Good Record.—The *Health Department Bulletin* of Asheville, N. C., for March, reports an enviable record for 1914 in the fight against typhoid.

It says:

"The Health Department is proud of the fact that there was not a single death from typhoid fever in Asheville in 1914 due to local causes—and only one resident death, caused by nursing an imported case.

"The fight against typhoid fever is not for the special benefit of the infant, nor the adult, nor the middle-aged, nor the old—but for them all collectively—so collectively let us set about this year to keep up our high standard, and challenge the world for a better record—

How?

"Vaccinate against typhoid fever—it is harmless—it protects. Drink Asheville water only.

"See that your dairyman's bacterial count is low—if not, buy from one that has clean milk.

"Swat the fly now and all the time.

"Wash your vegetables."

Defends Non-fumigation Attitude.—Incited by the criticism of a New York newspaper, the New York City *Health Bulletin* for April 10 stoutly defends the abolition of fumigation which it has adopted. After a short review of a charge of inadequate preventive measures with respect to measles, it says:

"The continuation of fumigation in Brooklyn (a borough in which fumigation is being continued as a control) was criticized by some of our friends, who inferred that the Department was wobbly in its attitude. As a matter of fact, the Department was not in the least wobbly. By continuing to fumigate in Brooklyn, we are obtaining just the kind of evidence needed to answer such superficial and uninformed criticism as that of the press.

"For the information of those interested, the following facts are presented, not as conclusive, because the period of the demonstration or 'experiment' is yet too brief for that, but as suggestive and as disposing, for the time being at least, of the argument made by the New York press:

"During the month of March, 1914, 1,606 cases of measles, with 53 deaths, were reported in the Borough of Manhattan.

"During the month of March, 1915, in the absence of fumigation, 1,357 cases of measles, with 15 deaths, were reported.

"In the Borough of Brooklyn, where fumigation continues to be performed, 1,652 cases of measles were reported during March, 1915, as against 1,413 in March, 1914.

"In the city as a whole, which includes both fumigated and non-fumigated districts, the number of cases of measles from January 1st to date exceeds the corresponding figures for 1914, is about the same as the figures for 1913, and is much less than the total for the corresponding period of 1912."

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Restaurant Inspection.—An excellent article on bakery and restaurant inspection appears in the *Bulletin of the Seattle* (Washington) *School of Sanitary Science*, the official organ of the health department, for February. Seattle has 916 restaurants, lunch counters, bakeries, candy-kitchens and confectioneries to be inspected and each of these is visited, on the average, once in every forty-two days.

It is pointed out that due to cramped quarters so frequently found, a certain confusion and apparent carelessness is sure to prevail in restaurants during rush hours. Newspaper reporters are most liable to visit these places at just such times and the article warns them against being unjust. Inspectors are instructed to make due allowance for such conditions.

The great importance of location is emphasized and the desirability of first-or second-story rooms as contrasted with basement quarters, is pointed out. Basement shops are scored lower than those above ground of equal cleanliness and new places are not permitted to be established in quarters of which the health department disapproves.

The score card used has for its purpose the facilitation of systematic supervision and its provisions are so reasonable that 44 out of 76 restaurants and bakeries taken at random score 90 or more.

Every restaurant is required to operate under a permit issued by the health department, and "every employee, in any place where candy is handled, or in any bakery or place where food is handled or sold, must pass a rigid physical examination and receive a health certificate before he or she is permitted to work in any such capacity." These certificates must be renewed annually and must be kept on file for inspection.

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Sanitary Campaign Plan.—A plan for a "year-round sanitary campaign" suitable for towns and cities of 1,000 to 10,000 population, has recently been outlined by the Dallas (Texas) Chamber of Commerce. The plan aims at both the business and residential districts, makes use of score cards and newspaper publicity and provides for "Civic League" committee inspection.

A "cleanest block" competitive plan attempts to secure residential district reform. The plan is reported to be very successful in Dallas.

Personal Notes.

Dr. G. M. Cooper, whole-time health officer of Sampson county, North Carolina, will soon be a member of the official staff of the State Board of Health. He begins work May 1 as chief of the Bureau of Rural Sanitation and as assistant secretary. The Bureau of Rural Sanitation replaces the Rockefeller Sanitary Commission's division of work which was discontinued in March.

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Noteworthy among Yale corporation appointments is that of Professor Charles-Edward Amory Winslow to be professor of public health in the Medical School, on the Anna M. R. Lauder Foundation. Professor Winslow was born in Boston in 1877 and received the degree of Bachelor of Science from the Massachusetts Institute of Technology in 1898 and the degree of Master of Science in 1899. After acting as assistant health officer in Montclair, N. J., and working for the Massachusetts board of health, he became instructor in sanitary biology and later assistant professor in the Massachusetts Institute of Technology where he remained from 1901 to 1910. During the later years of his connection with the Institute he was in charge of the sanitary research laboratory and of the sewage experiment station. He then became associate professor of biology in the College of the City of New York and is at present head of the division of publicity and education of the New York State department of public health.

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The following were elected to membership in the American Public Health Association on April 19, 1915:

Henry Nollner Rosser, M. D., Birmingham, Ala. Jefferson County, Alabama.

Wm. Eustis Brown, York Village, Maine. Health Officer.

John Richard Taylor, M. D., Madison, Wis.

Waldo Moffett Bowman, Toledo, Ohio. Pharmacist. President Ohio State Pharmaceutical Association.

Carrol Fox, M. D., U. S. Public Health Service, Washington, D. C. Surgeon, U. S. Public Health Service Pure Food Department, Dallas Chamber of Commerce, Dallas, Texas.

Wm. Everett Musgrave, M. D., Manila, P. I. Physician, Dean, College of Medicine and Surgery, University of Philippine Islands.

Ray Lyman Wilbur, M. D., San Francisco, Cal. Dean of Stanford University Medical School.

Julian Mason Gillespie, M. D., U. S. Public Health Service, New Orleans, La.

Owen R. Lovejoy, New York. General Secretary, National Child Labor Committee.

Walter Emerson Brown, Beverly, Mass. Sanitary Bacteriologist U. S. Public Health Service.

Chester A. Darling, Ph. D. Allegheny College, Meadville, Pa. Professor of Biology, Allegheny College.

Ellis Kellert, M. D. Bender Hygienic Laboratory, Albany, N. Y.

Aaron Gretzner Levy, New Orleans, La. Civil Engineer; Assistant Director of Purification, New Orleans Purification Plants.

Newton E. Wayson, M. D., San Francisco, Cal. Assistant Surgeon U. S. Public Health Service.

Robert Brooks Morse, Baltimore, Md. Chief Engineer, Maryland State Department of Health.

Charles Vernon Patchin, M. D., Dansville, N. Y. Sanitary Supervisor, New York State Department of Health.

Clifford Penney Fitch, Ithaca, N. Y. Bacteriology Teacher, New York State Veterinary College, Cornell University.

Wm. Sylvanus Shilds, Chicago, Ill. Consulting Engineer.

E. Alexander Hand, M. D., Walton, N. Y. Health Officer.

Arthur Sautter, M. D., Albany, N. Y. Health Officer of Albany.

Jason Franklin Chase, Boston, Mass.

Victor Hugo Stickney, M.D., Dickinson, N.D.

George Donohoe, M. D., Cherokee, Iowa. Superintendent Cherokee State Hospital.

Daniel Hartman Kress, M. D., Melrose, Mass.

Randolph H. Grimm, M. D., U. S. Public Health Service, Washington, D. C. Passed Assistant Surgeon U. S. Public Health Service.

Albert John Hoskins, M. D., Company E. Engineers, Fort Crockett, Galveston, Tex.

Harry Rutledge Hall, Baltimore, Md. Principal Assistant Engineer, Maryland State Department of Health.

Public Health Notes.

Discovers Typhus Organism.—The press has just announced the recognition of Dr. Harry Plotz, a bacteriologist of Mt. Sinai Hospital, New York City, as the discoverer of the organism which is the specific cause of typhus fever. The young discoverer also claims that he has perfected an anti-typhus vaccine. The above claims were demonstrated—apparently to the satisfaction of New York pathologists and physicians—at a meeting of the New York Pathological Society on April 14. Doctor Plotz—only 25 years of age, according to the press—is accredited with a discovery of the highest scientific character and value. It is reported that Dr. Hans Zinsser, the eminent New York bacteriologist who left last month for Serbia as a member of the Rockefeller expedition to take up the fight against typhus, was vaccinated with Doctor Plotz' new prophylactic before his departure. The immense value which all this work may have—in the event that the discovery proves true and the use of the vaccine is practicable—is realized from the following realistic description by Sir Thomas Lipton of the ravages of this highly infectious disease in Serbia:

"Disease is rife everywhere—typhus. Neither man, woman nor child of whatever station in life is immune from it. I went to one hospital where there were twelve American nurses, nine of whom had the disease. The American doctor who met me at the station at Ghevgheli and showed me round the place was dead when I called a few days afterwards."

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Medical Inspection of Schools.—The following list of recent converts to the efficacy of medical school inspection is taken from *The American School Board Journal* for January, 1915. The details involved in the application of general principles to specific cases are interesting and would doubtless be even more illuminating if compared in greater detail.

"The school board of Kewanee, Ill., and the nurse's board of the local women's club have coöperated in adopting a plan for promoting the general health of the children and the physical tone of the schools.

"The plan seeks to prevent the spread of epidemics, to equip the pupils for their studies by removing physical defects, and to keep up the standard of health in the schools. It is provided that: Any child who appears to be in poor health, or who shows symptoms of disease, will be sent by the principal to a dispensary for examination. Physicians of the city will serve in rotation for the preliminary examinations.

"Dental clinics will be held twice each week. Children are encouraged to go to their family physicians or dentists if in need of immediate attention. Children of parents who cannot pay for medical treatment, may be referred to the county physician. All work at the dispensary is free of charge.

"Niles, O. Upon the suggestion of Supt. W. C. Campbell, the school board has approved the appointment of a school nurse to serve three days of each week. Her duties will be to instruct mothers in the care of children, and to detect signs of disease. Sanitary conditions in the schools and homes will be given particular attention.

"Pontiac, Mich. The school board has provided for the appointment of a school nurse to follow up cases reported by the medical inspector.

"Walla Walla, Wash. Since the opening of the school term, the medical inspector has been engaged in notifying parents of the results of the medical examinations of pupils. The remainder of the school year will be devoted to inspections of newcomers and primary children who are in school for the first time. It is planned to examine children once every two years so that children who were inspected last year will not be subjected to scrutiny until the beginning of the next school year.

"Berkeley, Cal. Medical inspection of the school children is in charge of municipal nurses who examine the children and report on their condition. The schools are divided among the staff so that each one keeps as nearly as possible the same schools and records the results. The children are examined for vision, hearing, throat or mouth trouble, breathing and general nutrition."

Progress in North Carolina.—According to the North Carolina State Board of Health, a law passed by the recent General Assembly empowers cities, towns and counties to provide for the treatment of their indigent tubercular sick at the State Sanatorium, the cost of the treatment to be not more than a dollar per day. This law makes possible the means whereby towns and counties may care for their tubercular sick and give them a chance at recovery under the best possible circumstances the state can afford.

"In some states, counties and towns maintain their own sanatoria, but for efficiency and economy, a sanatorium maintained by the state and coöperated with by the towns and counties has proved the better plan."

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Better Ventilation for Schools.—The following directions for the installation of "cloth window ventilation" in schools—and the valid reasons for such a plan—may be timely. The well-known annual increase of the infectious diseases of childhood, when children come together for school in the autumn, and the great desirability of remedying this condition, may be in addition to the following another public health and even economic reason for better ventilation of schools.

"The cloth ventilating screen is a closely fitted wood frame covered with heavy finely woven unbleached cotton cloth (Block Rock for ordinary exposures and Pequot for exposed situations). These are placed in the window frames outside the lower sash, which is then raised. Each school room requires about one square foot of screen per pupil.

"The frame need not have mitred or tenoned joints but simply secured with two ten-penny wire nails at each corner to fasten the upright pieces to the top and bottom pieces. When the cloth is put on and fastened by the fillet in the groove the frame is perfectly rigid and strong as the stretched cloth holds it together.

"A nice quality of cypress makes a very substantial frame which can be stained with a solution of one part of asphaltum varnish in sixteen of turpentine.

"Built in this manner the cost will be from $1.00 to $1.50 per screen. Of course they can be made of oak or of any material and mortised together at greater cost.

"The cloth screen acts as a permeable membrane, allowing the outside air to slowly diffuse into the room; the closely woven cloth divides the incoming air into currents of infinitesimal size and of very slow velocity, so that it is quickly mixed with the warm air of the room with no perceptible drafts.

"The cloth screen also acts as a filter removing the dust from the atmosphere and as a result the screened rooms are practically free from dust unless dirt is brought into the rooms upon the children's feet. By its use as an air filter the cloth will sooner or later become very much discolored and filled with dirt, when it should be removed and new cloth put on; there is no use trying to wash out the dirt—it has become a part of the fibre of the cloth.

"The degree of air pollution of a room can be inferred very readily and correctly by the odors one perceives on coming in from the fresh outside air. It is a fact that the screened rooms are practically free from odors. Generally the odors from the clothing in the coat rooms add very much to the already bad air of schools, which can be remedied very effectually with cloth window screens in every window of every coat room. . . .

"The humidity of these rooms is practically that of the outdoor air and a temperature of comfort is more easily maintained."—*The American School Board Journal*, April, 1915.

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"Statisticology."—A paper under the above title was read by Dr. C. V. Reynolds of the City of Asheville (N. C.) Board of Health before the Buncombe County Medical Society and also before the Tri-State Medical Society at Charleston, S. C., February 17, 1915. The paper was a detailed plea for more justice in the keeping and recording of morbidity and mortality statistics—justice to the city or locality into which fatal diseases such as tuberculosis are imported and justice to the other city or community from which the victims have come. The first place—due to the fact that a sanatorium of some kind is located there, is unjustly credited with a false and an abnormally high death-rate and the second is unaware of the prevalence of disease or at least may be deceived by its falsely low death-rate. One of the most valuable and legitimate uses of statistics, the writer points out, is in connection with public health and

preventive medicine measures—and to the extent that statistics are unreliable and untrue, to the same extent is public health work dependent thereon blind.

Doctor Reynolds brought forward many statistics in support of his statements and showed several charts illustrating the injustice he is trying to combat. The remedies which he proposes follow:

"Allow each municipality to be responsible for every communicable, contagious, and preventable disease or death, which originated in her midst.

"Upon satisfactory proof of any communicable, contagious, or preventable disease, originating elsewhere, that disease shall be returned and recorded in the registration area in which the disease originated.

"All deaths occurring from imported diseases shall, upon satisfactory proof, be referred to the area in which such diseases occurred.

"All imported deaths, from non-registration areas, shall be compiled as such and reported to point of origin, also tabulated in the registration area in which the death occurred, for general information.

"All imported, contagious, communicable or preventable disease, from non-registration areas, shall be compiled as such, and reported to point of origin and tabulated as occurring in the registration area in which the disease occurred, for general information.

"With all possible emphasis, it is desired that my listeners be impressed with the dire need of statistical reconstruction,—not for the special benefit of the few, but for the good of the whole. Look not upon it with an impugning mind. Let us bend every effort toward a reformation, and accomplish much toward the prevention of preventable disease."

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"Typhoid in the Immunized.—At a meeting of the Société médicale des hôpitaux, according to *Presse médicale* for March 18, 1915, P. Carnot and B. Weill-Hallé summarized their conclusions concerning fever in those inoculated against typhoid as follows: 1, In an immense majority of cases, preventive inoculation confers complete immunity; 2, in certain rare cases, those vaccinated have a light fever of typhoid type; bacteriological examination shows in these cases a paratyphoid organism, but oftener the typical bacillus; 3, insufficient immunization may occasionally be attributed to defective methods of vaccination; 4, the feebleness of immunity is connected sometimes with bodily weakness from overwork; 5, sometimes feeble immunity depends on the number and strength of the infecting bacilli; 6, even if immunization is not perfectly satisfactory, it will generally be noted that fever in those inoculated is benign, short in duration, and without complications."—*New York Medical Journal.*

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Prophylactic Typhoid Vaccination.—In the *Wiener Klinische Wochenschrift*, February 25, Kirschbaum describes a method of typhoid vaccination which does not result in the local pain, headache, fever and general uneasiness to which the ordinary method often subjects the patient, although conferring equal immunity. He employs a twenty-four hour agar culture of polyvalent strains of typhoid bacteria containing about 600 million bacteria per cc. The bacteria are killed at 60 degrees, carbolic acid is added to make a 0.5 per cent. solution and 0.2 cc. is injected at the first treatment. Two weeks later 0.8 cc. is given and in another week the third dose of 1.5 cc., the sight of all injections being the left deltoid muscle.—*New York Medical Journal.*

✽

Natural and Artificial Immunity in Diphtheria.—An article by Hans Kleinschmidt in Volume 3, No. 3, of the *Beigtrage zur Klinik der Infectionskrankheiten und zur Immunitätsforschung* has aroused considerable discussion in British and American journals.

By means of the Schick test it has been demonstrated that 93 per cent. of new-born infants have antitoxin in their blood no different from that which is artificially produced in the adult. At one year of age only 57 per cent. of these children remain immune. Thirty-seven per cent. of the persons between two and five years of age are immune, 50 per cent. of those between five and fifteen and 76 per cent. of those between twenty-one and forty. The above figures correspond very closely to the age distribution of the disease and coincide with the experimental evidence which shows that natural immunity of the mother is transmitted to the child *in utero*.

"The active immunization of individuals by means of inoculations with diphtheria vaccines, although a method promising much for the future is not as yet adapted to general use. Behring's toxin-antitoxin mixture, the exact composition of which is still withheld from the profession, when injected into an individual, sets up an immunity at the end of ten to fourteen days, a period so long as to render this method by itself of little value in the case of individuals who have been exposed to diphtheria and whom one may desire to protect. This disadvantage may be obviated, Kleinschmidt says, by the simultaneous use of passive and active immunization."—*Medical Officer*, March 20, 1915.

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The Menace of Syphilis to the Clean-Living Public.—"Every community is divided into two classes of individuals—those who have syphilis, and those who are exposed to it," writes J. H. Blaisdell at the beginning of his article in the *Boston Medical and Surgical Journal* of April 1st. In making the study upon which his article was based he examined sixty cases in the early stages as they came to the Boston Dispensary and the relation of their infectiousness to their associates. These sixty cases had exposed 134 people through coitus between the time of their infection and their appearance at the Dispensary. Four hundred forty-two others had come in contact with them in family and boarding house life, while 651 fellow-workers had been in danger of contracting the disease. Four of these sixty cases were extragenital and probably innocent. Of the 576 people exposed through coitus or family life, five were known to be infected, four through intercourse, one child through being kissed. Of the 571 equally possible infections, nothing is known.—*New York Medical Journal*, April 17.

❦

National Organization of Public Health Nursing.—In June, 1912, the association known as The National Organization for Public Health Nursing was established. This Association was formed for the correlation and standardization of local organizations, and the collecting of reliable morbidity statistics. There are now 2,066 local associations and 4,895 nurses, and the increasing demand for public health nurses because of their efficiency in promoting public health, education and healthful living is rapidly increasing this number. The local associations are composed of both professional and non-professional members who are interested in public health work.

The organization is interested in the possible development of sickness insurance with nursing care and the extension of visiting nursing to include hourly and household nursing. It stands for

1. Active coöperation and affiliation of all public health nursing in each community, represented by a central committee on which sits a director and executive officer of each association.

2. Sound business principles and methods of administration in local associations, as distinguished from the rôle of "charity."

3. A fee system rather than free service, thereby extending the benefits to others than the dependent classes.

4. Special preparation of nurses for public health nursing, both general and special, through

(1) Post-graduate courses;

(2) Undergraduate studies and practice.—*The Modern Hospital*, April, 1915.

❦

The Subcutaneous Tuberculin Test.—Dr. Oscar Holden draws the following conclusions concerning the tuberculin test from his experience which he describes in *The Antiseptic* for December, 1914:

"I. The subcutaneous test is not infallible; cases occur in which a negative result is obtained, but which, from the clinical side, are indubitably tubercular.

"II. The test should not be used unless the patient can be kept under close and skilled supervision, otherwise bad effects may occur. Even with all precautions decided ill-effects sometimes supervene.

"III. A focal reaction, when it occurs, is of the greatest value, but at rare intervals gives rise to erroneous deductions.

"IV. A general reaction with a decided rise of temperature is also of help but is not so valuable as a focal reaction.

"V. A local reaction has no more significance than the Von Pircuet test already dealt with.

"VI. The subcutaneous test should not be employed in the case of young children, ob-

viously debilitated individuals and where the diagnosis can be made with some degree of certainty without its help."

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Good Sense in Contagion.—Some facts which are worth remembering are stated in a recent article by Minnie Goodnow, R. N. In contagious diseases the sick person himself is the real source of danger, and infection occurs chiefly by contact. The fundamental principle of the modern contagious hospital is to let things alone. Only the doctors and nurses are allowed to touch the patient. When they do, they work as in a surgical operating room and afterwards they remove articles of clothing which may be contaminated and thoroughly scrub their hands, being careful not to touch surfaces which may spread the infection meanwhile. The layman needs to realize that bacteria are simply minute plants and that he should avoid contact with any discharge from the patient which contains bacteria or with any surface which may have been contaminated. And if such contact is necessary thorough washing of the hands should follow.

We should realize the folly of disinfecting and fumigating and appreciate the value of cleanliness. In the past we have pinned our faith to fumigation and neglected to wash our hands.—*The Trained Nurse*, April, 1915.

✽

Protective Inoculation against Varicella.—The following is a brief summary of an article by Carl A. Kling which appeared in the *Berliner Klinische Wochenschrift*, January 4, 1915:

"The material for inoculation was derived from an active case of the disease in a child who was free from syphilis and tuberculosis and who showed no signs of any other infection. When the eruption is in its early stages vesicles are chosen which contain perfectly clear serum and which have not too much areola. Since the vesicles come out in crops, one patient will afford material for a few days. The virulence of the virus is probably greatest on the first day of the eruption, giving the greatest protection. The serum should be obtained under perfect aseptic precautions. The inoculation should be made with an ordinary vaccine lancet which is not too sharp; it is inserted into a vesicle of the patient and the clear lymph allowed to moisten its tip. The skin at the site of inoculation should be made tense, the lance inserted into it several times just far enough to draw blood. After about three stabs the lance should again be moistened with the serum from the vesicle. A total of three to six punctures should be made to insure success. One hundred and thirty-five patients have thus been successfully inoculated during an epidemic and only 23 per cent. of failures to produce immunity were recorded. After the inoculation, a light bandage is placed over the site for twenty-four hours. When local inflammation, the sign of success, appears, the dressing should be reapplied to prevent rupture of the delicate vesicle. In ten of the 135 inoculated children, a few vesicles appeared upon the upper portions of the body as well as at the inoculation site, and in three children a general varicella was produced."—*New York Medical Journal.*

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Compulsory Vaccination.—The March issue of the *New York State Journal of Medicine* devotes considerable space to the above topic apropos to the so-called Jones-Tallett bill. It contains an article by Doctor Biggs in favor of the proposed amendment, two opposing arguments and an editorial setting forth the opposition of the medical profession to any change in the present law.

The old bill requires all children to be vaccinated before being admitted to the public school, and makes provision for free vaccination when necessary. The amendment proposes to abolish compulsory vaccination but provides that whenever smallpox exists in any vicinity and the state commissioner of health or local board of health shall so certify in writing to the school authorities, the latter shall exclude from school every child unable to furnish a certificate from a physician that he or she has been successfully vaccinated. The board of health shall provide for vaccination and the municipality shall bear the expense incurred. Vaccination may be performed by a physician at such periods of the year as may be prescribed by the State Commissioner of Health. This bill will not effect the large cities.

The new bill originated from the opposition of rural communities (noticeably the case of

Niagara Falls), to compulsory vaccination because of its supposed dangers.

The main arguments for the proposed amendment are as follows:

(1) Public sentiment opposed to present law would support the proposed measure. (2) The coöperation of public sentiment is essential to health work. (3) The cases of smallpox in recent years are light, both because of the effect of vaccination and because of the non-existence of virulent strains. (4) Because of non-enforcement of the present law there are as many non-vaccinated people as there would be under the new law. (5) Although the virus is pure some evil results are likely to follow vaccination because of later infections. (6) The proposed bill will allow for vaccination when needed. (7) It will place authority with the commissioner of health, where it belongs. (8) It has been practically impossible to enforce the present law.

In opposition to this the following respective claims are made:

(1) The best judgment of the medical fraternity rather than public opinion should be the controlling factor. (2) The public is more indifferent than opposed and could be educated. (3) Reduction in virulence of the disease is directly dependent upon vaccination. (4) The new law would bring danger because more unvaccinated people would make great epidemics possible. (5) Statistics of compulsory vaccination in all parts of the world show that proper care removes practically every danger. (6) The proposed bill will permit frequent outbreaks of the disease. (7) The efficiency of the commissioner of health will be blocked by lack of the coöperation of local authorities. (8) Compulsory vaccination could and should be enforced by educating the public.

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Meat Poisoning.—Dr. L. C. Frost begins an article on the above subject in the February *American Medicine* by defining the following terms essential in a discussion of meat poisoning as follows:

"1. Ptomaine. A non-specific, alkaloidal poison; a half-way decomposition product of proteids when acted upon by putrefactive bacteria.

"2. Leukomaine. (Gautier) An auto-lytic non-specific, half-way decomposition product. Formed by the action of self-contained enzymes, and not by bacteria.

"3. Toxin. A specific, poisonous proteid; the secretory or excretory product of bacterial life.

"4. Intoxication. A morbid condition caused by absorption of poisonous non-living matter.

"5. Infection. An invasion and the morbid results of an invasion by living pathogenic or putrefactive bacteria."

Although the ptomaines and leukomaines were formerly thought to be responsible for epidemics in meat poisoning, the study of Van Ermingen shows that in 112 epidemics of food poisoning, 103 epidemics or 92 per cent. of them were caused by meat taken from animals suffering from septicemia, pyemia, enteritis and other bacterial diseases. The old idea was based upon experiments by intravenous injections and we now know that when absorbed in a normal manner from the digestive tract most ptomaines can produce only a mild irritation and intoxication. The evidence at hand shows that most of the trouble arises from meat which was infected by bacillus enteritis and allied organisms before the death of the animal or by bacillus proteus, coli, or botulinus through frequent handling or inadequate preservation.

The author continues with a study of the pathology of meat poisoning with special reference to botulismus.

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Infections of the Genito-Urinary Tract in Children.—The April *American Journal of the Diseases of Children* contains an article by Dr. R. M. Smith summarizing the literature of 1913 and 1914 on the above subject, giving references to the original articles. Some of the points brought out follow:

The existence of a rather large amount of gonococcus infection in the form of vulvovaginitis presents an unsolved problem. This is contracted in most cases from parents or from other girls of the same age, one of the most common sources of infection being the common toilet. Some of the preventive measures suggested are (1) the installation of a drop of 2 per cent. silver nitrate solution in the vestibulum vaginæ of all new-born girls whose mothers show evidence of gonorrhea, (2) instruction of parents by the visiting nurse regarding preventive measures,

(3) investigation by the visiting nurse of the origin of the infection and (4) the adoption of a "U-shaped" seat with low bowl and other precautionary measures in all public lavatories. The treatment employed consists of local applications of 2 per cent. silver nitrate solutions and the injection of vaccine.

Pyelitis or inflammation of the kidney or pelvis is most commonly caused by the bacteria of the colon group. It is less common and more frequently preceded by constipation among boys than among girls. This leads to the belief that the infection may be both from the colon by means of the blood and from without *per urethram*. The value of vaccine therapy is still much in doubt.

Renal and genital tuberculosis in children are both rare and originate from a variety of sources.

*

Simple Cure for Riggs' Disease.—The following article was sent out last month by the North Carolina State Board of Health.

"Nearly everybody has Riggs' disease. Dentists tell us that at least 95 adults out of a 100 have it to a more or less extent. This disease has baffled dentists for years. The loss of about half the permanent teeth is said to be due to this obstinate chronic disease. Now it is claimed to be curable. Thanks to science!

"Riggs' disease, or pyorrhea as the dentists call it, is a chronic disease of the gums, or rather the membrane that surrounds the roots of the teeth and lines the sockets of the gums. It causes the gums to gradually recede from the teeth, exposing the more delicate neck of the tooth and giving the teeth an elongated appearance. This process continues and in the course of years causes the gums to bleed easily and to become sore and ulcerous. It finally causes the teeth to become loose and almost drop out.

"Now it has been found that all this trouble is due to a peculiar germ that destroys this membrane which surrounds the root of the tooth and which lines the socket in which it rests. This particular germ is readily destroyed in from three to six days' treatment.

"To begin the treatment one should consult a dentist and have the teeth thoroughly cleaned. Deposits of tartar or yellow calcareous matter which accumulates, particularly along the inner edges of the teeth and between the teeth, should be removed, as these deposits irritate the gums and furnish lodging places for many kinds of germs. After the teeth are cleaned, or even before cleaning, one should begin the use of some form of the drug ipecac. This is conveniently taken in tablet form under the drug name of alcresta ipecac. Directions for taking the ipecac usually accompany the drug or any dentist can furnish the information. Emetine, a similar drug, is sometimes used with equally good results.

"To prevent reinfection, which is very easy, particularly with the use of common drinking cups, it is recommended that in washing the mouth and teeth a drop of a solution of one part fluid extract of ipecac to ten parts alcohol be used on the wet tooth brush. The use of one drop of this alcoholic solution as a mouth wash on a wet tooth brush should be continued regularly at least twice a day to prevent reinfection."

*

Baby Hygiene in Boston.—In 1911 Boston had an infant mortality rate of 125 and ranked seventh in the list of the ten largest cities of the United States—in the order of low infant mortality rates. Last year with a rate of 103.3 Boston ranked second to New York City alone. At least one of the most important factors in this rapid and desirable reduction is the work of the Boston Milk and Baby Hygiene Association. Last year, 4,097 babies were cared for and so efficiently was the work organized that the cost per baby per year was only $12.50. The Sixth Annual Report of the Association, which has just been published, gives the above interesting figures as well as many others and outlines the encouraging progress made last year. The organization has no endowment—the $23,000 expended last year being furnished by voluntary contributions.

To effect its purpose of keeping babies well, the Association follows three principles:

(1) The encouragement of breast feeding.

(2) The provision of pure milk at cost to mothers unable to nurse their babies sufficiently or at all.

(3) The teaching of mothers, through the supervision of skilled physicians and specially trained nurses.

One of the most interesting and significant

facts in relation to the work of the Association during the past year is that of the 83 deaths occurring among babies under the care of this organization—28 were due to pneumonia and 24 to gastro-intestinal disorders. This was the first time that the number of respiratory diseases has exceeded that of the intestinal group in "Station" babies.

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Effects of the Harrison Law.—"When the Harrison law became effective, March 1, it was widely predicted that the result would be a besieging of hospitals by crazed drug addicts, a crime wave of national scope and a trail of suicide and death across the country. A month has passed, and while the results have not been as terrible as the early hysteria painted them, have not even approximated the glaring headline predictions of the yellow press, they have nevertheless, been apparent to physicians and to others who come in daily contact with drug traffic. In the Philadelphia General Hospital—and this is true of practically every hospital in the country in which drug addictions are treated—the number of admissions has greatly increased. Without doubt the law has forced numerous habitués, who otherwise might have been satisfied to continue as such, to apply to physicians and institutions for treatment. Further, there is no doubt that the large majority of these unfortunates will be freed of their habit. The increased admissions to these hospitals do not represent an increase in drug addictions; they are simply an objective manifestation of the operation of the Harrison law."—*Journal of the American Medical Association*, April 10, 1915.

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Court Upholds Tuberculin Test.—*The United States Public Health Report* for April 9, records the following decision by the Mississippi Supreme Court.

HAWKINS *v.* HOYE et al., 66 S. Rep., 741. Dec. 14, 1914.

"The legislature by virtue of the police power of the state, may enact all needful laws for the purpose of preserving the health, preventing the spread of disease, and protecting the lives of the citizens. It may create boards of health and bestow upon them necessary powers to protect the general health of the people.

"Statutes establishing boards of health and investing such boards with the power to adopt ordinances, rules, and regulations necessary to advance the public health are not unconstitutional as being a delegation of legislative power.

"The requirement that the cows used in the dairy business, where milk therefrom is sold generally to the people, should be inspected as to their health twice during the period of a year is valuable in the preservation of the public health and not an unreasonable regulation.

"Such a regulation does not violate the constitution of Mississippi nor section 1 of the fourteenth amendment to the Federal Constitution.

"The purpose of such a regulation is to prevent the spread of disease among human beings, and its promulgation and enforcement by the State board of health, rather than by the live stock sanitary board, was proper.

"REED, J.: Appellant operated a small dairy in Lauderdale County near the city of Meridian. He owned 11 cows which were in use for milk in his dairy business. He brought this action at law for damages which he claimed to have suffered from the rejection of 6 of his cows upon an examination of them for tuberculosis and other contagious and infectious diseases. He charged in his declaration that the examination and rejection of the cows were without authority of law and wrongful. To the declaration appellees filed the plea of general issue and special pleas. Appellant demurred to the special pleas and, his demurrer being overruled, appealed to this court. . . ."

The opinion then gives at considerable length, reasons for the decision—and cites numerous supporting decisions.

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"Diagnosing a Nation."—The following brief summary of the Official Report for 1914 by Surgeon-General Blue of the United States Public Health Service appeared in *The Survey* recently under the above title. This report is one of the most comprehensive and valuable of the Service publications.

"The report discusses briefly the year's work in scientific research, quarantine, sanitary surveys and statistics, marine hospital and relief, personnel, and publications.

"Officers of the service who have studied malaria, especially, state that it is usually failure to recognize the relation between this disease and unsanitary conditions, to guard milk and water supplies, and to provide and enforce suitable health laws, that has made malaria so acute a problem in many parts of the United States. It has been their experience, however, that when such conditions and the measures necessary to control them are brought to the attention of local officials, and others directly concerned, prompt action in a large majority of cases immediately follows.

"Pellagra investigation has centered especially at places that gave opportunity for special study of the causes, manifestations, and dietary treatment of this disease. Research will be continued during the present year.

"Trachoma investigations carried on especially among school children, and in certain mining regions of the South, have resulted in some interesting discoveries. Contrary to general impression, negroes, though not immune, are found much less widely infected than are white people. Also, the foreign element is a negligible factor in the problem. Trachoma seems essentially a disease of the native population.

"Among miners, trachoma seems to be due to locality rather than to conditions in the industry, though the drifting of miners from place to place is an important consideration in the spread of infection.

"The investigators recommend systematic examination of school children, exclusion of infected children from school, employment of school nurses, free special trachoma hospitals, coöperation of mining companies, better sanitary conditions, and thorough education on the subject in infected regions.

"Tuberculosis; typhoid; occupational diseases; some local outbreaks of smallpox; and sanitation in rural districts, schools and railroads, are among other important matters included in this report. Laboratory results are stated to have utterly condemned the widely exploited Friedmann treatment for tuberculosis, and to withhold for the present any approval of the claims of the Doctors von Ruck.

"The important and too little known work of the Hygienic Laboratory is briefly told; also the maritime, insular, and foreign quarantine system, and the special precautionary measures against plague.

"Surgeon-General Blue indicates as the immediate needs of the Public Health Service increased personnel and appropriation for both scientific and clerical work; an additional building and equipment for the Hygienic Laboratory; and means of meeting the demand for literature on health subjects, a demand which has greatly increased beyond the present means of supply."

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Simple Trap for the House-Fly.—A maggot trap which will practically prevent the breeding of the house-fly is described in a new bulletin of the United States Department of Agriculture, No. 200, "A Maggot Trap In Practical Use; An Experiment in House-Fly Control." The investigators who carried on this experiment at the Maryland Agricultural College declare that during August and September at least 98 per cent. of the larvæ breeding in the manure were destroyed, and although the trap was not so efficient when the weather became colder, even then it greatly reduced the number of flies.

The principle of the trap is simple, it is easy to construct, and the expense is said to be probably less in the long run than the investment which many farmers now make in screens for their dwellings, and sprays and fly-nets for their live stock. In its roughest outlines the trap consists of a concrete basin with a latticed wooden platform erected upon it to hold the manure. The basin is connected by a drain pipe with a small concrete cistern. The bottom of the basin is filled with water into which the maggots breeding in the manure drop, as they are about to turn into the pupa or chrysalis stage, and are drowned. At frequent intervals the water is run off into the cistern and is then pumped back on the manure pile. In this way all the liquid manure is saved.

The successful operation of this trap rests upon several facts connected with the habits of the house-fly which have been thoroughly established by observation. The adult fly lays its eggs in fresh manure. There they remain until the larva stage is almost over and the insects are about to enter the pupa or chrysalis stage. At this time a pronounced tendency to migrate is evident. In consequence, if the

manure is placed upon a platform with a lattice-work bottom, the larvæ, while migrating, will fall through these openings into the water in the basin below. In the case of the experiments at the Maryland Agriculture College a careful count showed that between July 25 and October 1 about 112,000 larvæ were killed in this way. This, however, does not include the number that were picked up from the basin by sparrows or poultry. Altogether it is estimated that during the warm weather the efficiency of the trap was probably 99 per cent. Later, when the temperature was lower, the trap's success was not so marked. This was accounted for by the fact that when the air is much colder than the manure heap the larvæ will not attempt to leave the heap and therefore will not fall into the basin.

Another difficulty experienced arose from mosquitoes using the water in the basin and the cistern to breed in. This was overcome by cleaning out the basin at regular intervals and by sprinkling a little oil over the surface of the water in the cistern.

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Medical Milk Commissions and Certified Milk.—The first bulletin in the new departmental series of the United States Department of Agriculture is a contribution from the Bureau of Animal Industry entitled Medical Milk Commissions and Certified Milk; this is a revision of a previous bulletin on the same subject.

The organization and objects of the first milk commission are described and the origin and meaning of "certified milk" are set forth. The word "certified" has been registered in the United States Patent Office and may only be used by a duly organized medical milk commission.

The first milk commission was organized in 1893. Since that time over 60 commissions have been established but nearly one third of that number are inactive at present.

About 125 dairies are engaged in producing certified milk and the daily production is nearly 25,000 gallons, an increase of 300 per cent. in five years. While this seems a remarkable increase, it should be remembered that only about one half of 1 per cent. of the total milk supply of the country is certified.

While the chief demand for certified milk is for infants and sick people, it further serves to teach the public the value of careful methods in milk production and the extra cost of absolutely clean milk.

The bulletin described the equipment and methods necessary for the production of certified milk. It is pointed out that expensive equipment is not a necessity so much as a careful and unremitting attention to details.

In 1907 the American Association of American Milk Commissions was organized. The methods and standards for the production and distribution of certified milk adopted by this association at its 1912 meeting are given in the appendix to the bulletin.

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Liverpool School of Public Health.—"The Liverpool City Council has recently received instructions to proceed with the erection of a building for the Liverpool School of Public Health. With this School will be associated the departments of the Professor of Bacteriology and the City Analyst. A fine site, about 980 square yards in area, has been secured adjoining the main University buildings.

"The advantage of bringing these three departments of hygiene under one roof is very great. The result will be a more comprehensive provision for the needs of the city and report in the matter of sanitary administration, while the School of Hygiene will be equipped for the teaching of all branches of public health. Application is being made to the local Government Board for power to borrow 897,000 for the cost of building, toward which the University School of Public Health will contribute 815,000, besides a yearly rental of 81,500 plus a third of the rates."

The American City, October, 1913.

✽

An Unfortunate Delay.—By failing to repeal an amendment, which the State Board of Health thinks is useless and unnecessary and to which the federal government objects very strenuously, the North Carolina legislature has doomed its state to remain in the non-registration area for another year at least. The amendment was passed with the original "model law" for registering births and deaths last year and due to the fact that the significance of the amendment, the State Board thinks, was not properly under-

stood, the House failed to pass the bill which called for its repeal. Although the state has a law which costs $10,000.00 a year to execute, it is not recognized and is ranked with the other twenty-five states who have poor registration laws or none at all.

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Public Health Surveys.—Public health surveys continue to increase in quality and usefulness. The surveys made by the Department of Surveys and Exhibits of the Russell Sage Foundation may be taken as typical. During the past year this department has published "A Public Health Survey of Topeka," a pamphlet of 98 pages with many illustrations, which discusses in considerable detail the city's vital statistics, sanitary conditions, and health department. Attention is given to the distribution of preventable diseases throughout the city and to the tuberculosis, infant mortality and venereal disease problems. Other matters receiving attention are the city water supply, sewerage and sewage disposal, milk supply, food supply, and wells and privies. Recommendations are made to meet the individual problems and the entire situation. It is urged that an investment in the health department will probably, dollar for dollar, save most lives, and that a full-time trained health officer is necessary. During 1914 the Department of Surveys and Exhibits also made public health surveys of Ithaca, N. Y., and Springfield, Ill. Considerable effort is expended to bring the findings home to the people, both in the preparation of the printed reports and through exhibits and newspaper publicity. Among the lessons of these surveys are the unexpectedly large numbers of wells and privies found (about 7,500 of each in Springfield, a city of about 58,000 population), the relatively greater frequency of communicable disease in the poorer districts, and the neglect by the city of some of its most important health problems and of its health department.

Industrial Hygiene and Sanitation.

Prescribes "Self-control."—George M. Price, author of "The Modern Factory," in an address on "Factory Hygiene" December 18, 1914, stated that in his opinion real progress in industrial hygiene can only be made through a "system of industrial self-control."

"It is my claim," said Doctor Price, "that for the achievement of best industrial conditions, for the gain of workers in industrial hygiene, reliance can be placed neither upon the pure benevolence of the employers nor upon the fear of state interference and punishment, nor upon the rising might of the labor movement, nor even upon the very plausible theory of industrial efficiency.

"Real progress in factory hygiene and real improvement in industrial conditions, can only be achieved when industries are organized in special groups; when each industry is organized as a separate unit, and is given the right and power to control its own destinies, to propound its own sanitary and safety standards, to evolve improvements especially adapted to its own needs, and to enforce its own regulations without fear or favor from outside sources; in other words —a system of industrial self control."

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Reporting of Occupational Diseases.—What is the best method of securing the accurate and complete reporting of occupational diseases? The efficacy and necessity of such reporting is no longer an open question.

Only time can tell how the payment of a fee of fifty cents by the State Board of Health of California to the physician for every properly filled-out notice sent in of lead, phosphorus, arsenic, mercury poisoning, anthrax or "caisson disease," will work out. This plan, tried out in Connecticut, brought in returns from only three cases between September 1, 1911, and February 13, 1912.

The 1913 Connecticut law placed a penalty of $10.00 on each failure to report such diseases within forty-eight hours.

Whether this will be a more feasible solution is still possibly open to doubt, but it is a fact that between January 1, 1914, and November 1, 1914, 27 cases of occupational disease were reported.

*

"For You."—Number 1 of Volume 1 of *Industrial Hygiene* has just been issued by the Ford Motor Car Company. Its avowed purpose is the promotion of the health and safety of the Ford employees.

The first number tells of the private hospital maintained by this profit-sharing company, of the organization and work of the "Central Safety Committee" and of the legal department maintained in the interests of the employees. The leaflet is printed only in English. A new issue is given out in each pay envelope.

The following, under the caption, "The Hospital," illustrates the general style of the leaflet:

"The hospital connected with the Ford factory is equipped to handle all emergency sick and accident cases occurring in the shops. An efficient staff of physicians is constantly prepared to render first aid at all times.

"The hospital is located across the hall from the pay office. It is easily reached from all parts of the factory.

"The hospital is not intended to serve as a free dispensary at all times, but aims to give prompt and efficient relief to all cases of accidental injury taking place during working hours.

"Be quick to use the hospital in case of injury. When a fellow workman is injured, notify your foreman, and help take him to the hospital without delay.

"Don't think any cut or scratch is too slight to take to the hospital. A very small wound may lead to serious blood-poisoning if you allow dirt to get into the sore.

"After you have been to the hospital, follow closely any directions they give you."

*

Lead Poisoning in Storage-Battery Industry.—Bulletin 165 of the United States Bureau of Labor Statistics gives the results of an interesting study of lead poisoning in the manufacture

of storage batteries. The summary of the bulletin follows:

"The ordinary storage battery, not the Edison, consists of plates of lead, or of lead grids covered with a lead oxide paste. In the preparation of these plates and grids the workmen are exposed to the danger of lead poisoning through dust of metallic lead and through fumes from melted lead.

"In making and applying the paste the workmen are exposed to still greater danger of poisoning from the oxides of lead.

"The subsequent processes of assembling, lead burning, etc., involve exposure to the fumes of melted lead and to the dust from dried oxide paste.

"These dangers can be obviated by installing hoods and exhausts to carry off fumes and dust, by substituting machine for hand work, by providing ample washing facilities for the workmen and insisting on strict cleanliness on their part, by providing a separate lunch room as the only place where food may be kept and eaten, and by keeping the premises where the work is carried on clean and free from dust.

"Inasmuch as some risk always remains after all possible precautions have been taken, there should be thorough medical supervision of the men in order to detect and eliminate those who are oversusceptible to lead, to discover cases in the early stages, and to give instructions to the men on the care of themselves.

"By using precautions such as these, German and British employers have greatly reduced the amount of lead poisoning in factories of this kind. In the largest German factory the rate of poisoning in 1912 was 0.97 per 100 employed, and in Great Britain the rate for all factories during this same year was 3 per 100.

"In the United States the five largest factories were during 1913 employing about 915 men in work which exposed them to lead. It has been possible to discover 164 cases of lead poisoning which occurred among the employees of these plants in this one year. This makes a rate of 17.9 per 100 employed.

"The largest proportion of lead poisoning occurred among the men handling lead oxides, the lowest among those handling metallic lead only. The disease was usually typical acute lead poisoning, with gastric symptoms predominating, but even an acute attack often resulted in incapacitation from work lasting for several weeks to two months or over. Out of 40 cases, 23 had marked nervous symptoms. Chronic plumbism was rarely found, since the men hardly ever remain long at the work.

"The employees in this industry in the United States are for the greater part of foreign birth; many speak no English and are ignorant of the dangers of the work, or if they recognize the danger, do not know how to protect themselves against it.

"The difference between the American rate of lead poisoning and the British and German rates must be explained by the different standards of sanitation and management in this country as compared with those of European countries. None of the five large factories in the United States comes up to the British or German establishments in cleanliness or in the removal of fumes and dust, and only one provides as careful medical supervision. Smaller factories in this country are even less well managed.

"The three states in which the five largest factories are situated have already passed laws which cover this industry and provide safeguards for the men engaged in it, and, if these laws are strictly enforced by intelligent factory inspectors, there is no reason why our record of lead poisoning should not fall, as it has fallen under intelligent supervision in Great Britain and Germany."

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Unique Record.—The Hudson and Manhattan Railroad has recently submitted to the American Museum of Safety its record of the year ending June 30, 1914, in competition for the Anthony N. Brady Memorial Medals.

During the year, 2,518,313 train miles were run and 59,981,011 passengers were carried. Notwithstanding the enormous volume of the traffic, only one fatal accident occurred, in which a trespasser was killed. There were only 165 injuries, including industrial accidents—and not one of these occurred in train accidents.

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Regulates Painting Business.—The State Board of Labor and Industries and the Industrial Accident of Massachusetts have issued a public notice of the following regulations per-

taining to the painting business in Massachusetts,—the rules to take effect on May 1, 1915:

1. It shall be the duty of every corporation, association, firm or person engaged in the painting business, and employing one or more persons, to transmit, by mail or otherwise, a written statement, within thirty days after the passage of these rules and regulations, to the State Board of Labor and Industries giving the name under which, and the city or town and street with the number in which the business is carried on. Every corporation, association, firm or person hereafter engaging in the said business shall transmit the statement, as aforesaid, at least five days before beginning business.

2. It shall be the duty of the Joint Board, at any time, or upon complaint, to inspect rigging. When rigging is found to be unsafe, the Joint Board shall give written notice, without delay, to the employer, drawing his attention to its unsafe condition. The employer shall not again use the unsafe rigging until it is made safe by the employer, in accordance with the directions of the Joint Board. (Chapter 813, Acts of 1913, Section 13: Whoever violates any reasonable rule, regulation, order or requirement made by the Joint Board under authority hereof, shall be punished by a fine of not more than one hundred dollars for each offence.)

"Rigging," as used in this rule, shall mean ropes, blocks, ladders, planks, trestles, brackets, and all other form of supports.

3. No employer shall use or allow to be used ropes where acid has or may come into contact with the same.

On all staging swinging thirty or more feet from the ground, guard rails shall be provided.

When an extension ladder, or several ladders are used for a bed stage, there must be at a fall each intersection, and such intersection tied together.

There shall be no more than three men on a two fall stage, and where the falls are more than fifteen feet apart, a third fall shall be used.

When not in use, rigging shall be housed or suitably covered and protected from the weather, in a manner satisfactory to the Joint Board.

(Note.—In the interests of occupational and public safety, the Joint Board recommends that painters discontinue the practice of loaning rigging.)

Accompanying the notice of the above regulations were the following "safety rules for employees" and "health hints":

1. Never use a ladder with a damaged side or rung.

2. In ascending a ladder never take hold of the rungs; always take hold of the side.

3. Never straddle and slide down a ladder (the so-called "fireman way").

4. In holding an extension ladder while being raised, always hold by the sides; never hold by the rungs.

5. In footing a ladder pull with the man underneath; by so doing you will hold the foot more fast, and help the man to raise the ladder.

6. Never foot a ladder on a wet or frosty roof.

7. Always make a solid footing for your ladder; never use small blocks to build a footing; if it is necessary to build a footing use boards two or more feet long, and in all cases see that the footing is firm.

8. Never leave your ladder where it will be injured, or lying on uneven ground where it will twist or strain the sides.

9. Test the gutter or roof before hanging stage.

10. See that the falls always hang plumb.

11. Never hang a fall with a dip, a twist, or out of square with the roof hooks.

12. See that the spreader straps are close to the side of the ladder.

13. In hanging stage see that there is sufficient spreader to steady the stage.

14. See that the spreader is square with the stage.

15. Always lap the stage boards a safe distance to prevent tip holes on stage.

16. When the coping or other obstructions make it impossible to steady with the spreaders, see that the stage is made fast to the side of the building.

17. See that the falls hang not over four feet from end of stage to make it steady and well balanced.

18. Never allow the spreader roll to hang on a blind hook, a projection, or on the edge of an opening where the motion of the stage is liable to make it jump or jerk.

19. Two or more men should not congregate in one spot on a stage to create an excessive strain and unbalance the stage.

20. When working on a stage, do not lean against the building.

21. Never jump on a stage; the sudden jar is liable to unseat a hook.

22. In making fast the hitch on a stage, see that the pull line is square across and well bound.

23. In making fast the block hitch, hold fast on hauling line with one hand until the hitch is secure.

24. Never allow the ropes to chafe or rub on sharp stones that are found outside new houses, etc.

25. Never throw any part of the rigging from the roof, or about in any way, as it is liable to injure same.

26. See that the fall ropes are safe from being caught or pulled while stage is hung.

27. Never leave the falls in a damp place.

28. Report to the employer any defects in ladders or rigging.

29. When standing in the gutter always face the roof, toes in the gutter; never stand with heels in gutter.

30. Never wear torn overalls or shoes.

31. Never stand on a paint pot to reach from a stage.

32. If a man is subjected to fits, dizziness, light-headedness or has an inclination to jump, he should so state at the time he is requested to go into places unsafe for him.

33. No employee shall suffer loss of employment for reporting or objecting to use of unsafe rigging.

Health Hints.

Habits, as well as the occupation of painters, are dangerous.

1. Keep the general health always good, by plenty of light, good food and fresh air in the home. Sleep at least eight hours every night.

2. Personal cleanliness is important.

(a) Wash with warm water and soap daily, and always before eating.

(b) Take at least one full hot bath a week.

(c) Keep the nails and quick of the fingers clean.

(d) Do not wear the same clothing on the street or at home as that in which you work. Use overalls.

(e) Take good care of teeth and gums.

(f) Do not hold handles of paint brushes in the mouth.

3. It is dangerous to chew tobacco or gum when working. The lead on the fingers is sure to be swallowed.

4. The constant use of alcoholic beverages tends to lessen the resistance of the body to lead poisoning. Alcoholic drinks should be avoided. They do not counteract the poison, but act with it, and cause injury to the kidneys.

5. Drink as much milk as possible. Milk, eggs and other albuminous foods counteract the poison. Always eat a good breakfast before going to work. Especially, drink milk.

6. Have at least one good bowel movement every day. Use epsom salts occasionally.

7. Do all you can to keep down dust. Do not get lead on your hands and clothes any more than you can possibly help.

8. Bandage cuts or bruises carefully to keep out dirt and paint. Apply alcoholic iodine to fresh wounds to prevent infection.

9. At the very first sign of not feeling well, consult your physician.